ACTION AGAINST DENGUE

Dengue Day Campaigns Across Asia
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Acknowledgements

We would like to congratulate Member States for their efforts against emerging infectious diseases, including dengue. This book documents the launching of ASEAN Dengue Day and advocates for the prevention and control of the disease.

The content of the book demonstrates the commitment, energy and enthusiasm of Member States towards the launching of ASEAN Dengue Day 2011.

WHO and the ASEAN Secretariat would like to thank everyone who contributed to the development of this book.
early 75% of all dengue cases worldwide occur in Asia and the Pacific. This threat has been recognized by countries throughout the region that have taken action to protect their populations. National leaders also have acknowledged that they must act regionally in order to protect people within their own borders.

One of the forces driving regional preparedness for health threats such as dengue is the Association of Southeast Asian Nations (ASEAN). This close-knit community of nations has developed a powerful partnership with the World Health Organization in an effort to achieve a shared goal: a healthy and secure population.

One clear sign of this cooperation was seen on 15 June 2011. ASEAN Health Ministers declared that day — and each subsequent 15 June — to be ASEAN Dengue Day. This important annual event allows ASEAN members, in coordination with WHO, to consolidate dengue prevention and control measures.

We congratulate all ASEAN Member States for marking the successful launch of ASEAN Dengue Day and for affirming the regional partnership needed to address dengue.
Before 1970 only nine countries had experienced epidemics of dengue haemorrhagic fever. This increased more than fourfold by 1995. Today, about two fifths of the world’s population is at risk for dengue, with cases reported in more than 100 countries. Of the estimated 2.5 billion people at risk, around 975 million live in urban areas in tropical and subtropical countries of South-East Asia, the Pacific and the Americas.

In 2010, Member States of the Western Pacific Region reported 354,099 cases, with 1,075 deaths (CFR 0.30%). This represents the highest reported number of cases since 1998. Australia, Cambodia, Lao People’s Democratic Republic, Malaysia, Philippines, Singapore and Viet Nam all reported more than 1,000 cases in 2010.
Dengue is transmitted by the bite of the *Aedes* mosquito with four serotypes of the virus circulating in the tropics. The problem is particularly acute where growing populations live in crowded conditions. The *Aedes aegypti* mosquito has adapted to breeding in and around human dwellings and deposits its eggs in any uncovered water container, including vases, cans and tyres. Dengue can also be carried by infected humans, including those travelling nationally and internationally.

Dengue results in substantial costs to the health sector and the economy as a whole. A week’s illness can be financially detrimental to families, especially when breadwinners are affected.

In 2010, Member States of the South-East Asia Region reported 293,868 cases, with 1,896 deaths (CFR 0.65%). This represents the highest reported number of cases in the last 5 years (Bhutan and Nepal started reporting dengue in 2007). India, Indonesia, Myanmar, Sri Lanka, and Thailand all reported more than 10,000 cases in 2010. Dengue is an emerging public health problem in Bhutan, Maldives and Nepal.
Most forms of the disease are self-limiting and vary from relatively mild increases in body temperature to classic, incapacitating dengue fever; however, in rare occurrences — particularly among children — complications occur in the form of dengue haemorrhagic fever (DHF) or dengue shock syndrome (DSS). There is no specific treatment for dengue; early clinical diagnosis and appropriate clinical management of severe complications of the disease are key to increasing the survival of patients. Dengue cannot be prevented by medicines or health care workers. Surveillance, timely reporting of cases and proactive vector control are necessary for dengue prevention. In addition to robust systems for surveillance and response, an important part of the effort against dengue is public education and community action. This includes the participation of all sectors of society helping people understand how to prevent mosquitoes from breeding near their homes and the importance of early treatment.
Chapter 2

WHO and ASEAN action against dengue
To respond to the increasing threat from dengue, the Asia Pacific Dengue Strategic Plan (2008-2015) was endorsed by WHO South-East Asia and Western Pacific Regional Committees. The plan recognizes that countries in the region vary in terms of their financial resources, preparedness and capacity to respond when it comes to the prevention and control of dengue. The strategy provides general recommendations that can be adapted locally.

With the goal of reversing the rising trend of dengue in countries of the Asia Pacific region, the plan recommends integrated mosquito control, encourages the improvement of diagnosis and case management of the disease, as well as the strengthening of national surveillance. It also supports collaboration between programmes, agencies, sectors and countries for prevention and outbreak response. Greater community involvement is encouraged, as is early recognition of dengue complications and timely referral of cases. The strategic plan helps WHO Member States in their efforts against dengue and supports the goals of the Asia Pacific Strategy for Emerging Diseases (APSED), which encourages Member States to meet the requirements of the International Health Regulations (2005). The broader APSED strategy guides and assists Member States in strengthening their capacity to prevent, detect and respond to emerging infectious diseases, and to ensure they are well prepared in the event of a newly emerging threat.

Addressing dengue in Asia and the Pacific is a priority at the highest levels of WHO. The Regional Director for the Western Pacific has called on health ministers to demonstrate strong leadership and commitment in the fight against the disease. He noted that dengue prevention and control is an issue that cuts across sectors and that national resources need to be mobilized with better regional collaboration.

WHO is committed to supporting national efforts against dengue, including assisting in the development of indicator-based surveillance, strengthening public health laboratories and
implementing integrated vector management. It is also committed to coordinating regional initiatives that play a role in dengue prevention and control, such as information sharing, laboratory networks and regional clinical networks for emerging infectious disease. In addition, the WHO South-East Asia Region has developed the publication, *Comprehensive Guidelines for Prevention and Control of Dengue and Dengue Haemorrhagic Fever*.

**ASEAN's commitment to addressing dengue**

The ten Member States of the Association of Southeast Asian Nations (ASEAN) have consolidated their regional cooperation efforts under the banner of creating an "ASEAN Community" by 2015. These efforts focus on regional collaboration in political-security, economic and socio-cultural community pillars. The socio-cultural community includes an effort to improve ASEAN's capability to control communicable diseases.

In line with this effort, the ASEAN Expert Group on Communicable Diseases, which deals with regional programmes on emerging infectious diseases, formulated the ASEAN Medium Term Plan on Emerging Infectious Diseases (2011–2015). Included in this plan is a focus area on addressing specific diseases such as dengue.
At the 10th ASEAN Health Ministers Meeting, held in Singapore in July 2010, delegates noted that “dengue has affected millions of people worldwide and Southeast Asia is becoming the most seriously affected region”. They also acknowledged that increasing public awareness is one of the main strategies to reduce the risk of dengue transmission.

A key aspect of this important meeting was the endorsement of ASEAN Dengue Day as an annual advocacy campaign day for dengue prevention and control. There was commitment to support and promote the official launch of ASEAN Dengue Day on 15 June 2011 and every year thereafter.

**WHO and ASEAN Partnership Against Dengue**

The strong working relationship between WHO and ASEAN was enhanced by the Memorandum of Understanding between the ASEAN Secretariat and World Health Organization (2009–2013). This strategic partnership promotes ASEAN health cooperation and encourages WHO technical expertise and support for country-level programmes.

In their efforts to successfully launch ASEAN Dengue Day, WHO and ASEAN worked together to consolidate prevention and control measures. The organizations used the Dengue Strategic Plan as a basis for developing key messages for advocacy use by health ministers and programme managers.

The key messages are:

**Calling for Action from All**

Dengue prevention and control is a shared responsibility. Unless everybody plays their role, dengue will not be controlled. The dengue mosquito bites mainly during day time hours and breeds in artificial
containers near and inside our homes, schools and throughout our communities. Individuals have a key role in keeping their surroundings larvae-free and in seeking early treatment should signs and symptoms of dengue occur. Individuals, communities, private sector and government agencies (including non-health) need to work together to fight dengue.

**Shifting from Reactive to Proactive Approaches**

Dengue is here to stay! Don’t react! Act year round.

A proactive approach means moving from response-driven to long-term prevention and preparedness-driven activities. Putting measures in place for better case detection and preparing in advance for the outbreak response (e.g. trained staff for rapid response teams, adequate stockpiles of necessary equipment and supplies) will help to minimize the impact as early detection may result in control measures being implemented early. A proactive approach makes better use of resources to minimize negative health, social and economic impacts from dengue.
Strengthening Capacity in an Efficient and Sustainable Way

There are strategies and initiatives in existence that focus on capacity building for emerging infectious diseases. Existing initiatives include Integrated Vector Management, and core capacity development in accordance with the Asia Pacific Strategy for Emerging Diseases (APSED) and the International Health Regulations (2005). Integrating dengue prevention and control into these proven, ongoing initiatives may result in improved efficiency and sustainability in addition to a better use of limited resources.

United Fight Against Dengue

Dengue does not recognize borders. Regional information sharing and regional laboratory capacity building are two ways to improve the early detection of and response to outbreaks, utilizing regional mechanisms of ASEAN and WHO. Addressing common threats in a united and coordinated way will maximize our region’s resources and secure our region’s health.

The key messages were disseminated through information, education, and communication (IEC) materials and activities. These include dissemination through posters, leaflets, bags and umbrellas. Each of these IEC materials included action lines or tag lines that promote and encourage community participation in taking action in dengue prevention. Other communication channels for the key messages included posting of summaries of Dengue Day activities and press releases on the websites of ASEAN and WHO Western Pacific Regional Office. The “Jakarta Call for Action on the Control and Prevention of Dengue” also included permutations of the key messages. This document was read during the successful Official Launching of ASEAN Dengue Day conducted by Indonesia (as lead country for the event under ASEAN) on 15 June 2011. Simultaneous observance of Dengue Day was done by each ASEAN Member State through their respective national initiatives with themes revolving around the key messages.
In the lead up to the inauguration of ASEAN Dengue Day on 15 June 2011, the WHO Country Office in Malaysia distributed items with key messages about dengue prevention to Health Ministries in Brunei Darussalam, Malaysia and Singapore. These included the WHO ASEAN bags, umbrellas, posters and pamphlets. The country office also posted the Action against Dengue poster and distributed dengue awareness flyers.

On ASEAN Dengue Day – 15 June 2011 – Dr Harpal Singh, technical officer for the WHO Country Office for Brunei Darussalam, Malaysia and Singapore, gave a briefing entitled *Dengue: What Can You Do?* to the staff of WHO Global Service Centre (GSC) in Cyberjaya, Malaysia.
The informative hour-long briefing covered a wide range of information from the spread of dengue in the world throughout the years to dengue trends in Malaysia as well as facts on Aedes mosquitoes, dengue fever and preventive measures that can be taken up by individuals and the community to reduce the spread of dengue.

**WHO Collaborating Centre on Arboviruses launched**

In Singapore, the Environmental Health Institute was inaugurated on 15 June 2011, as a World Health Organization Collaborating Centre (WHO CC) for the Reference and Research of Arbovirus and their Associated Vectors. The inauguration ceremony was attended by the Minister for the Environment and Water Resources, Dr Vivian Balakrishnan, and the WHO Regional Director for the Western Pacific, Dr Shin Young-soo.
Chapter 3

Regional ASEAN Dengue Day event – Jakarta, Indonesia
The Republic of Indonesia, which chairs ASEAN, hosted the regional launch of ASEAN Dengue Day, at the National Museum. The launch was attended by Health Minister Endang Rahayu Sedyaningsih and Professor Tjandra Yoga Aditama, the Director General of the Disease Control and Environmental Health. The Governor of Jakarta and the Secretary-General of ASEAN provided opening remarks.

Jakarta Call for Action

ASEAN participants, along with the ASEAN Secretariat and WHO officials, drafted the Jakarta Call for Action on the Control and Prevention of Dengue, which was announced during the regional launch of ASEAN Dengue Day.

The statement noted with concern the burden of dengue: nearly 50 to 100 million dengue infections with 20,000 deaths occur annually worldwide, with 75% of those in the Asia Pacific Region. It went on to note that ASEAN Member States have the highest number of dengue infections in the Asia Pacific Region and that dengue infections, and deaths, have a significant socio-economic impact on ASEAN Member States.

ASEAN Member States have in place programmes to prevent and control dengue infections; however, these need to be aligned with regional strategies and involve all relevant stakeholders. The Call for Action noted that there has been progress in public-private partnerships; however, these need to be strengthened. There is also a need to sustain initial successes in global, regional and national efforts to control and prevent this infection.

It was acknowledged that as part of the World Health Organization Global Strategy on Dengue, the Asia Pacific Dengue Strategic Plan (2008–2015) was endorsed by Member States of the South-East Asia and Western Pacific Regions to reverse the increasing trend of dengue. This plan is in line with the Asia Pacific Strategy for Emerging Diseases (APSED), a biregional strategy to strengthen national and regional capacities against emerging diseases.
The Call for Action recognizes that ASEAN Member States have prioritized dengue following the mandate of the ASEAN Socio-Cultural Community Blueprint endorsed by ASEAN Leaders in 2009. The ASEAN Strategic Framework on Health Development (2010–2015), as endorsed by the ASEAN Health Ministers Meeting in 2010, provides the operational guideline in the control of communicable diseases. The ASEAN Expert Group on Communicable Diseases is the health subsidiary body that plans regional interventions on communicable diseases including dengue.

ASEAN stakeholders were called upon to strengthen regional cooperation by ensuring continuous effort and by enhancing regional preparedness and capacity through integrated approaches to surveillance, prevention and timely response for an outbreak; to strengthen national and regional alert and response capacities in an efficient and sustainable way; to share information, experiences and best practices in improving the access to primary health care by people at risk/vulnerable groups through regional workshops, seminars and exchange visits among the ASEAN Member States; to encourage close collaboration and create networks among the public and private sectors and civil society in addressing the effort to prevent dengue transmission.
In addition, stakeholders were encouraged to strengthen capacity in an efficient and sustainable way: to put in place integrated vector management together with surveillance and control activities; to improve core capacities of human resources; to strengthen national health services for ensuring early diagnosis and improving case management.

The need to promote intersectoral collaboration was also stressed with a call to increase the awareness and understanding of non-health sectors of their roles and responsibilities in dengue prevention. It was also noted that there is a need to move from reactive activities into long-term prevention and preparedness-driven activities involving health and non-health sectors, including a call to strengthen multisectoral planning to prevent and control dengue infection, which is complex and multi-faceted. It was also recognized that there is a need to welcome and consider new and appropriate initiatives from public and private, health and non-health sectors, including but not limited to collaboration on research and development of dengue vaccines.

**ASEAN-WHO press statement**

During the ASEAN Dengue Day activities, a joint ASEAN-WHO press statement was released. The statement, entitled ASEAN and WHO Call for United Fight against Dengue, called on "all sectors of society to unite in the battle against the disease, which has developed into a formidable threat to health in Asia".

It noted that ASEAN Dengue Day would be held every 15 June to increase public awareness on dengue prevention and control. Activities would be conducted at regional, national and sub-national levels to raise awareness. For the inaugural ASEAN Dengue Day, the Republic of Indonesia led the preliminary activities for the official launching. The activities, such as the ASEAN Dengue Conference, Regional Dengue Logo Competition, and other national initiatives, helped increase public and government awareness about the disease as well as promote commitment from all health and non-health stakeholders.
The press release noted that the Jakarta Call for Action on the Control and Prevention of Dengue, and the Jakarta conference, specified that all stakeholders are committed to addressing the problem and called for enhanced collaboration and cooperation from all sectors.

“As we strengthen our community-building efforts, ASEAN Member States are committed to working together for the health security of the peoples of ASEAN, and dengue is one of our priority diseases for action,” said the Secretary-General of ASEAN, Dr. Surin Pitsuwan.

“Tackling dengue is everyone’s concern, delegates to the conference agreed. The disease cannot be fought by the health sector alone. All sectors need to collaborate,” said Dr Samlee Plianbangchang, WHO Regional Director for South-East Asia.

“Dengue respects no boundaries and our region needs to move from response-driven activities to long-term prevention and preparedness-driven approaches,” said Dr. Shin Young-soo, WHO Regional Director for the Western Pacific. “A proactive approach will make better use of our resources and minimize negative health, social and economic impacts of dengue.”

Regional logo competition

As part of the ASEAN Dengue Day activities, the results of a regional logo competition were announced. The Ministry of Health of the Republic of Indonesia invited the ministries of health of the ten ASEAN Member States to submit one entry for the ASEAN Logo Competition for the regional launch of ASEAN Dengue Day in Indonesia.

The criteria for selecting the winner included: adherence to the theme; depicting an ASEAN community; simplicity; uniqueness; universal appeal; aesthetic appearance; and narrative message reflected in the logo. Indonesia was announced as winner of the competition.
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Winner: Indonesia
Chapter 4

National Dengue Day events
As agreed all 10 ASEAN Member States conducted national activities to mark ASEAN Dengue Day.

**Brunei Darussalam**

Brunei Darussalam joined the region in its inaugural ASEAN Dengue Day celebration by launching the first-ever ASEAN Dengue Day in Bandar Seri Begawan on 15 June 2011.

The Brunei Darussalam Minister of Health Pehin Dato Adanan Yusof launched the event and signalled Brunei’s continued effort in combating the disease.

In 2010, Brunei saw 298 dengue cases and two deaths, a significant increase from the 38 dengue cases that were reported in 2009.

In his speech, Health Minister Pehin Dato Adanan Yusof said that dengue prevention and control is a shared responsibility, with all sectors of society playing a role. The country’s approach to controlling the disease is to be proactive and to move from being response-driven to preparedness-driven.
Brunei Darussalam also conducted briefing and dialogue sessions with village and district leaders on the prevalence of dengue in the country and on proactive efforts that may prevent dengue.

As a result, clean-up campaigns and vector control activities, such as source reduction, are being regularly conducted.

In addition, dengue health education talks and exhibitions are held regularly in villages, schools, and government and private agencies to help raise awareness and change attitudes about dengue.
Cambodia has been organizing national dengue campaign days on an annual basis for several years. In 2011, the national dengue campaign day to emphasize the dengue outbreak alert was organized on 20 June in the compound of Bak Touk secondary school in Phnom Penh. The key theme of the day was “prevention of dengue is everyone's responsibility”.

Through mid-June 2011, the overall reported dengue cases and deaths remained within the range of the previous five-year average. Outbreaks occurred during the months of May and June in several provinces, including Kampong Thom, Takeo, Rattanakiri and Prey Veng.
The dengue campaign event included a rally which started at Bak Touk secondary school compound at about 06:00 and passed through several main streets of the city before ending in the same compound at about 08:00.

About 650 people attended the ceremony, including: staff from Ministry of Health, Ministry of Education and Ministry of Women's Affairs; monks; municipality representatives; other governmental and nongovernmental organizations; school teachers and students.

The programme started with a blessing from the monks, and the students sang songs related to dengue prevention and general hygiene. They then performed a drama related to dengue prevention, early diagnosis, timely referral and treatment. All performers received a small token from the Ministers of Education and Health.

The director of the National Center for Parasitology, Entomology and Malaria control (CNM) delivered the welcome speech, followed by remarks from the WHO representative and the Minister of Education. The opening speech was presented by the Minister of Health. The speakers emphasized the need for everyone to participate in the fight against dengue.

Balloons were released, and there were symbolic demonstrations performed to destroy dengue vector breeding sites that include the use of jar covers, putting larvicide in water jars, burning and burying garbage. The events were broadcast via national television, radio and the newspapers.
Cambodia’s Strategy Against Dengue

Cambodia addresses dengue through a national strategy which aims to strengthen emergency preparedness and outbreak response. The strategy also promotes community participation and school-based dengue preventive activities, while seeking to improve clinical management through the training of health care practitioners.

Every year, there are refresher training courses for clinicians on early diagnosis and treatment of dengue. There is also annual distribution of larvicides in the target provinces where the majority of dengue cases traditionally occur.

The national dengue programme carries out operational research on the effectiveness of chemical larvicides and newer forms of larvae control such as the use of guppy fish.
The Republic of Indonesia celebrated ASEAN Dengue Day by organizing a two-day ASEAN Dengue Conference as part of regional activities on 13 to 14 June 2011. Those who were present at the opening ceremony of the scientific conference and made opening remarks included: Minister of Health Endang Rahayu Sedyaningsih; Professor Tjandra Yoga Aditama, the Director General, Disease Control and Environment; and Dr Surin Pitsuwan, Secretary-General ASEAN.

The conference was attended by ASEAN delegates, government officials from Indonesia, medical doctors from hospitals in Jakarta, Bogor, Depok, Tangerang and Bekasi areas, representatives from related health organizations and representatives from WHO.

The objective of the conference was to strengthen regional cooperation and secure commitment on the effort to control dengue in ASEAN countries.

The programme included presentations on the burden of dengue, dengue virology, clinical management, updates in vaccine development and dengue, and the International Health Regulations (2005). Delegates from ASEAN Member States also reported on their experiences regarding dengue control.
The scientific conference resulted in the drafting of the Jakarta Call for Action on the Control and Prevention of Dengue.

The Director General of Disease Control and Environmental Health of the Ministry of Health of the Republic of Indonesia invited delegates and participants to a dinner reception with the Minister of Health of the Republic of Indonesia. In addition, the Governor of Jakarta hosted a dinner and cultural dance show for delegates and participants at Jakarta City Hall.

The Ministry of Health, Republic of Indonesia, hosted competitions to support the socialization of the ASEAN Dengue Day theme: Dengue is everybody's concern, causing socio-economic burden, but it's preventable. These included a national logo competition, an English debate competition for high schools and a poster competition.
Two hundred and ninety three participants from all over Indonesia joined the national logo competition. Of these, 16 nominees and three winners were chosen. Of these winners, one went on to win the regional logo competition for Indonesia.

Ten high schools in five districts of Jakarta participated in the English debate competition. The competition displayed the ability of the students to debate in an international language and their knowledge and motivation to deal with a health problem such as dengue.

The poster competition aimed to depict the theme: Dengue is everybody’s concern, causing socio-economic burden, but it’s preventable. The participants came from all over Indonesia. In total, 136 posters were received.
Dengue is endemic in the Lao People’s Democratic Republic with yearly outbreaks. The national Government supports ASEAN Dengue Day as an annual advocacy campaign and began with activities in Vientiane, which has 10% of the population of the country. The main messages of the campaign were to promote community participation in vector control with collaboration from all: individuals, communities, government agencies and the private sector.

On ASEAN Dengue Day at the National Culture Hall, the Ministry of Health held the national launch with almost 600 participants from the Ministry of Health, the Ministry of Education, the Ministry of Information and Culture, military representatives, the National University of Laos, district governors, village authorities and the private sector. All were encouraged to eliminate mosquito breeding sites and get rid of larvae.

The Deputy Director of the Department of Hygiene and Prevention, Director of the National Emerging Infectious Diseases Coordination Office (NEIDCO), Ministry of Health, Dr Bounlay Phommasack noted the critical need for collaboration and cooperation of...
various sectors in the efforts against dengue. He shared the Jakarta Call for Action that was declared on ASEAN Dengue Day during the regional launch in Jakarta, Indonesia.

The representative from WHO congratulated the Government for the clean-up campaigns, which were an example of a proactive measure to move from response-driven to long-term prevention and preparedness-driven activities.

The objectives of the Dengue Day activities were: to identify key partners to support action against dengue; to prevent outbreaks by proactively reducing breeding sites in households, institutions and public areas; and to ensure essential messages were targeted effectively.

Activities included an advocacy workshop for the National Committee for Communicable Diseases and a consultation meeting for health and non-health partners preparing for the campaign.

A memo from provincial and district governors was released to government employees and community heads to actively combat dengue through vector control by implementing weekly larvae clean-up campaigns.

A student group from Teacher Training College, Ministry of Education, is helping household leaders identify potential mosquito breeding places.
Several formal and informal consultations were carried out with other ministries to enable an effective clean-up campaign, particularly in high risk areas, such as construction sites, schools and public areas.

Media orientation on ASEAN Dengue Day efforts held on 3 June 2011 ensured good awareness by the media and resulted in accurate coverage of the event.

Clean-up campaigns were conducted in several settings, including on 4 June 2011 in Dongdok village, where the village chief and residents organized a clean-up campaign to demonstrate the importance of destroying larvae.

On 13 June 2011, Lao National University, the Forestry Department faculty of Dongdok University and Tanmixay village organized an awareness-raising session for university students and teachers. About 350 people participated in larvae clean-up activities within the university compound. About 60 students participated as volunteers in a community clean-up campaign: advising households to check containers surrounding their homes and
community for larvae; cleaning up and burying rubbish which could contain water; and putting larvicide or guppy fish into containers which cannot be cleaned or emptied.

On 14 June 2011, awareness for students and teachers was held at Dongkhamxan’s Teacher Training College, and a student-led clean-up campaign focused on villages surrounding the colleges.

There will be ongoing clean-up campaigns throughout the dengue season and messages will continue on television and radio until November 2011.

**Malaysia**

ASEAN Dengue Day was launched on 16 June 2011 by Deputy Prime Minister The Most Honourable Tan Sri Muhyiddin bin Hj Mohd Yassin. The event, held at the HGH Convention Centre Kuala Lumpur, was also attended by Dr Corinne Capuano, WHO Representative for Brunei Darussalam, Malaysia and Singapore and Dr Harpal Singh. Both were there to demonstrate WHO’s commitment against dengue.
In his address at the launch of ASEAN Dengue Day, Health Minister The Honourable Dato' Sri Liow Tiong Lai reminded the public not to be complacent about the dengue situation in the country. “Although the number of reported dengue cases has been low, the public must not be complacent. Communities and agencies must continuously carry out prevention activities in order to prevent the rise of dengue cases. Dengue prevention is a shared responsibility,” he said. “Joint action must be put into practice when addressing the issue of dengue.”

Liow also said that the government will focus on mobilizing and making the community aware that their role in reducing breeding places of mosquitoes is the key to dengue prevention.

Deputy Prime Minister of Malaysia, Tan Sri Muhyiddin bin Hj Mohd Yassin, who launched the event, echoed the sentiments of the Health Minister and praised the national Communication for Behavioural Impact (COMBI) project. He stressed that combating dengue is a shared responsibility and called on all parties to take responsibility to ensure that Malaysians remain healthy and free from dengue.

An awareness-raising event for the prevention of dengue was held at the HGH Convention Centre.
At the event, the Ministry of Health also took the opportunity to re-launch the national COMBI project. At the same time, the national COMBI logo and COMBI Guidelines book to assist local communities in carrying out COMBI projects were also launched.

In addition, the Ministry also awarded tokens of appreciation to members of the private sector, nongovernmental organizations (NGOs) and local communities from various states with the best COMBI programmes.

As part of their anti-dengue campaign, the Health Ministry also enlisted Malaysian celebrity and TV host Aznil Haji Nawawi to be the Ministry’s anti-dengue ambassador and to headline its anti-dengue campaign, called Jom Ganyang Aedes (Let’s Crush Aedes), due to his appeal to both younger and older generations.

The campaign, launched in June, served as a platform to disseminate information about dengue and Aedes mosquitoes to ensure an educated and Aedes-free community.
Other preventive efforts to eradicate dengue include the Jom Ganyang *Aedes* (Let’s Crush *Aedes*) gotong-royong (cooperative action to attain a shared goal) programme, as well as other general dengue awareness campaigns, such as buses with advocacy body wraps, placement of advocacy billboards in communities, schools, bus stations and mobile exhibitions at hot spot areas.

### Proactive action from all – Malaysia’s COMBI approach

Dengue has been a challenge in Malaysia and 2010 saw the country’s highest number of dengue cases, with 46,171 cases reported and 134 deaths. Although the numbers of reported dengue cases are lower in 2011 compared to the same period in 2010, vigilance is needed and the timely launch of the inaugural ASEAN Dengue Day has helped boost awareness and preventive efforts in halting this disease.

The COMBI approach, which aims to transform specific behaviours to help communities carry out projects, has been important in Malaysia’s efforts to curb the spread of dengue. An effort “by the community for the community”, the COMBI project is a proactive effort to prevent and control dengue.
A decade has passed since Malaysia’s first COMBI project was carried out in Johor Bahru in 2001.

The project, which was implemented by the Johor State Health Department from August to October 2001 with technical assistance from WHO Headquarters and WHO Western Pacific Regional Office, focused on reducing the number of dengue fever cases and subsequent deaths in the area.

The COMBI project included local advertising and advocacy along with the deployment of Dengue Volunteer Inspection Team (DeVIT) members and bicycle riders, and the distribution of household dengue inspection sheets to families through students. Point of service (POS) promotion was conducted at government clinics as well.

The project proved to be a success and was readily adopted as the national plan for social mobilization and communication for dengue prevention and control.

As part of the celebration of ASEAN Dengue Day, the Ministry of Health also elected to re-launch the national COMBI project in a bid to remind the community of its shared responsibility and to encourage the local communities to keep up the good work in fighting this disease.

The Ministry also recognized the proactive and tireless work of some members of the private sector, nongovernmental organizations (NGOs) and local communities from various states by awarding them with the best COMBI project award. At present, there are 2126 COMBI projects being put into practice, and 205 of those projects are currently being spearheaded by local NGOs.
ASEAN Dengue Day was commemorated together with National Malaria Day on 15 June 2011 at the Ministry of Health, Nay Pyi Taw, Myanmar. The general objective was to increase awareness about prevention and control of dengue and malaria, which are common diseases during the rainy season.

The Myanmar Minister of Health, Professor Pe Thet Khin opened the commemoration ceremony. About 400 representatives from local NGOs, international NGOs, WHO and other United Nations agencies attended the ceremony.

Professor Pe Thet Khin noted that the disease causes not only social impacts but also economic impacts. He also noted that the case fatality rate of dengue in Myanmar has decreased to one percent in 2010 compared to six percent in 1970. He added that dengue infection is not only limited to kindergarten and primary school age children, but also affects older age groups, including middle age and elderly groups.
Professor Pe Thet Khin quoted the theme of this year’s ASEAN Dengue Day: Dengue is everybody’s concern, causing socio-economic burden, but it’s preventable and called for people to take preventive measures.

After the ceremony the Minister of Health and guests visited an exhibition displaying information about the two diseases.

The commemoration ceremonies were also conducted in 15 states/regions of the country in collaboration with the Ministry of Health, United Nations agencies and key stakeholders. About 4000 people attended.

There was nationwide airing of information on prevention and control of dengue and malaria on television as well as health education sessions at state/regional levels in collaboration with NGOs and key stakeholders. The educational sessions aimed to increase the awareness of people in the prevention of malaria and dengue.

There were demonstrations on integrated vector control methods for both diseases, such as the use of larvicides, bed net impregnation, long lasting insecticidal nets distribution, provision of malaria case management at health facilities, and fixed clinics and mobile clinics.
The Philippine Department of Health celebrated the maiden year of ASEAN Dengue Day with a motorcade headed by Health Secretary Enrique T. Ona, WHO Scientist Dr Jeffrey Hii, and local government officials of Caloocan City.

The Declaration of ASEAN Dengue Day was held in Caloocan City to recognize the efforts of barangay officials through the Liga Ng Mga Barangay (League of Barangays) to seriously undertake the government’s anti-dengue campaign. The city was one where clusters of cases were detected.

Through a joint Memorandum of Agreement with the Department of Health and the Department of Interior and Local Government, Barangay League President Rico Judge Echiverri pledged that each member barangay will implement dengue prevention and control programmes.

The motorcade route included four stops. The first was in Barangay Bagong Barrio where Dr Hii accompanied Secretary Ona, who conducted a ceremonial turnover of nets and ovitraps to Rico Judge Echiverri. Other activities included covering of water drums with net covers. The second stop was at the Sangandaan Public Market to install posters and fliers in strategic areas. The third stop was in San Roque Cathedral, where Bishop Deogracias Yniguez accepted the turnover of dengue information kits.
The last stop was Caloocan High School where Mayor Enrico Echiverri joined representatives from the Department of Education, Department of Science and Technology and WHO for the signing of the Memorandum of Agreement.

**Philippines action against dengue**

The Memorandum of Agreement outlined the roles and responsibilities of the three agencies. Under the agreement, the Department of Health will formulate and disseminate policies and guidelines for the implementation of the National Dengue Programme. The department will also, in consultation with stakeholders, formulate the national and regional operational plan for the programme. In addition, it will oversee programme implementation at the national and regional levels in coordination with other stakeholders.

The Department of Health also agreed: to provide technical assistance to local government units and other stakeholders; to establish a Regional Dengue Coordinating Committee; to collate and analyze reports and provide feedback to stakeholders; and to monitor and evaluate programme implementation.
Under the agreement, the Department of Interior and Local Government, through its regional offices, agreed: to issue a Memorandum Circular on National Dengue Prevention and Control Programme; to assist the Department of Health and local government units, as well as other stakeholders, in the implementation and monitoring of the dengue programme; to encourage local government units to allocate a portion of their available resources for the implementation of the dengue programme; and to conduct monitoring and supervision of barangays in the implementation of the programme.

Under the Memorandum of Agreement, the League of Barangays agreed to have its members pass, disseminate and implement an ordinance that will provide a portion from local tax collections for the implementation of the programme for a dengue-free community. The League also agreed to conduct monitoring of the implementation of the ordinance, and encourage its members to conduct regular clean-up drives, vector surveillance and control, and resource mobilization. Members are also encouraged to organize a Dengue Task Force, refer cases to the health centre and coordinate with the health centre for dengue-related activities. Barangays will submit feedback reports to the concerned city/municipal health office regarding dengue prevention and control in their community.

“Dengue is everybody’s concern, but with our concerted efforts, dengue can be controlled,” Health Secretary Ona said.
Singapore is situated in a dengue-endemic region. In the absence of any specific treatment and vaccines for dengue, vector control remains an important control measure for the disease. With a large proportion of the population living in high-rise public housing situated in close proximity, active community involvement is crucial in limiting the breeding of the *Aedes* mosquito. Dengue prevention and control is and remains a shared responsibility where all parties need to work together.

**Sustainable and efficient approach**

Singapore pursues an integrated evidence-based approach comprising pre-emptive source reduction, vector surveillance and control, virus surveillance, operationally relevant research, public education and community outreach and law enforcement.

A preventive surveillance programme led by the National Environment Agency was implemented to detect and destroy mosquito breeding habitats. To ensure that valuable resources are deployed strategically to achieve optimal outcome, a Geographical Information System was employed to monitor and analyze a massive amount of information, such as *Aedes* distribution and dengue cases. The Geographical Information System enables the integration of data to identify focus areas where intensive source reduction exercises can be carried out. To further guide these operations, a virus serotype surveillance system was established to detect emerging serotypes and allow rapid controls to prevent the spread of the new serotype.
Research and development also play an important role in this continued fight against dengue. The Environmental Health Institute under the National Environment Agency carries out research on the behaviour of the *Aedes* mosquito and the dengue virus so as to formulate appropriate preventive and control strategies that can be implemented in the dengue surveillance and control programme.

Public involvement is necessary to maintain low vector population, as the vector repopulates soon after vector control operations are relocated. Singapore adopts a 3P (People-Public-Private Sector) strategy in outreach programmes on dengue control. These 3P partners, comprising grassroots organizations, educational institutions and commercial organizations, understand different targeted groups better and are able to provide valuable advice on the most appropriate means of outreach. In addition, the Inter-Agency Dengue Task Force was constituted in 2005 to ensure effective mosquito control and enhanced coordination among partners. The task force is chaired by the chief executive of the National Environment Agency and comprises 28 public, private and professional organizations. This platform serves to enhance communication and coordination among partners on dengue control efforts. It also helps to resolve inter-agency issues and responsibilities relevant to mosquito control. The task force is a demonstration of intersectoral collaboration at the highest level in Singapore.
As the epidemiology of dengue is a complex interplay of many factors including mosquito vector, virus, environment, herd immunity and human behaviour, the battle to control dengue is an ongoing challenge for Singapore. Unfaltering in spirit and armed with a multipronged approach, Singaporeans are united and committed in the challenge to control dengue and reduce its transmission.

As part of this overall effort, Singapore participated in the first ASEAN Dengue Day by hosting a series of activities jointly organized by the Ministry of Health, the National Environment Agency and the Tan Tock Seng Hospital. The activities targeted the public, general practitioners and clinicians, as well as the scientific community and public health practitioners.

The nationwide dengue prevention message was 'Do the 5-Step Mozzie Wipe-out today' - a common activity that engages everyone to play their part against dengue. Pamphlets on ASEAN Dengue Day and dengue prevention messages were produced and distributed in road shows and house visits. In addition, dengue posters and live mosquito exhibits were displayed to create public awareness for shared responsibility and the need for everyone to act to prevent dengue transmission.

A web page was created on the 'Campaign Against Dengue' website (www.dengue.gov.sg) for the public to acknowledge their commitment against dengue. This will be used to monitor the commitment of the community.
The Inter-Agency Dengue Task Force Group comprising 28 government agencies and private associations was also enlisted to disseminate the Dengue Day messages. These activities had reached an estimated 50,000 people.

The STOP Dengue Translational and Clinical Research team at the Communicable Disease Centre of the Tan Tock Seng Hospital organized a seminar, entitled *Dengue Research and Its Impact on Clinical Practice* on 11 June 2011. The seminar provided updates on the latest progress in the STOP Dengue research initiative, which focuses on optimizing early diagnosis, prognosis and case management for adult dengue infection. More than 140 primary care physicians and general practitioners attended the series of talks by local infectious disease physicians. In conjunction with the seminar, a dengue exhibition was held, and attended by the Minister of Health, Mr Gan Kim Yong, with live mosquito displays and posters educating the public about dengue infection.

On 15 June 2011, a symposium entitled *Tackling the Dengue Challenge* was hosted by the Environmental Health Institute (EHI), a research arm of the National Environment Agency. The event was attended by some 400 local and international scientists as well as public health practitioners. Speakers were invited to present their latest findings on vector control, virology, drug development, diagnosis and clinical management. The symposium also included a real-time conference Q&A tool to facilitate interactive discussion on current issues surrounding dengue control and research.
Thailand launched ASEAN Dengue Day with a Memorandum of Understanding for Dengue Prevention and Control, which was signed by officials with the Bangkok Metropolitan Administration, the Ministry of Natural Resources and Environment, the Ministry of Interior, the Ministry of Education and the Ministry of Public Health.

In addition, the Bureau of Vector-Borne Diseases of the Department of Disease Control, Ministry of Public Health, organized ASEAN Dengue Day events on 15 June 2011. About 800 people attended from various organizations including government ministries, media, local administration organizations, school children, as well as community leaders and village health volunteers.

The event was chaired by the Permanent Secretary for Public Health and started with a welcome address by the Nonthaburi Provincial Governor. Three winners of the ASEAN Dengue Day logo contest were awarded with plaques and monetary prizes. The award presentation was followed by a show about cleaning up and leaving no breeding space for dengue mosquitoes. The highlight of the event was the Memorandum of Understanding signing ceremony for dengue prevention and control.
The memorandum was signed by the Permanent Secretary for Public Health and Deputy Permanent Secretary of other ministries involved, as well as the Deputy Governor of the Bangkok Metropolitan Administration. The Permanent Secretary for Public Health and the Director-General of the Department of Disease Control met the media and provided information on ASEAN Dengue Day initiatives and measures to prevent and control dengue.

In the afternoon, the event continued with a conference on dengue. Panellists in the conference included an outstanding village health volunteer, an officer from a district of Bangkok, a professor from the faculty of Tropical Medicine, Mahidol University, and officers from the Bureau of Vector-Borne Diseases.
After the conference, participants visited the ASEAN Dengue Day exhibition, which included presentations about dengue vectors, the natural history of the disease, all 38 entries in the ASEAN logo contest, and some selected examples of outstanding dengue prevention and control in communities. The exhibition continued until 17 June 2011 with music and dance shows by students.
In recognition that dengue fever is a public health problem, the Vietnamese Ministry of Health requested all provinces to celebrate ASEAN Dengue Day on 15 June 2011. At the national level, the Ministry of Health and the Pasteur Institute in Ho Chi Minh City, in cooperation with the People’s Committee of Can Tho City, organized ASEAN Dengue Day celebrations in Can Tho City.

Participants at this event included: the Vice Minister of Health; Director and Vice-Director of Viet Nam General Department of Preventive Medicine; leader of the National Institute of Hygiene and Epidemiology; Tay Nguyen Institute of Hygiene and Epidemiology; Pasteur Institute of Nha Trang; Institute of Malaria, Parasitology and Entomology in Qui Nhon and Ho Chi Minh City; representatives from the WHO office in Viet Nam and ASEAN country missions.
Can Tho government leaders included the Secretary of Party, Vice-Chairman of the People’s Committee, the Director of Can Tho’s Health Department and representatives of southern provinces. More than 500 people participated in the event. Speeches from the Ministry of Health, WHO and the Can Tho people’s committee highlighted the importance of the following issues: the campaign for a clean environment to reduce mosquito breeding sites; the mobilization of local resources for dengue prevention and outbreak control; intersectoral collaboration and cooperation in dengue case and vector surveillance; and improved public awareness on dengue control and prevention measures, as well as action to reduce vector breeding sites at household levels.

Also highlighted was the importance of cooperation among sectors, such as women and youth unions, and farmers associations, to implement action plans for dengue control at district and commune levels; and the close monitoring of epidemiological evolution and preparedness for outbreak control.
The ASEAN Dengue Day participants visited dengue control activities at the commune/village level and checked on the presence of mosquito larvae in water containers and other potential breeding sites in selected households.

Other provinces such as Bac Lieu, An Giang, Dong Nai, Ha Tinh, Tay Ninh also celebrated ASEAN Dengue Day in collaboration with health service departments and People’s Committees.

**Proactive approach to dengue prevention and control**

In the Socialist Republic of Viet Nam, the government has made dengue prevention a priority. Over a 20-year period, Viet Nam has successfully reduced dengue mortality and morbidity. Mortality was reduced from 0.3 per 100 000 population for the 1991–2000 period to 0.1 per 100 000 population for the period 2001–2010. However, the number of reported dengue cases remains high, with more than 100 000 cases each year since 2007. The average annual morbidity, however, has fallen from 112 per 100 000 population for the 1991–2000 period to 93 per 100 000 population for the period 2001–2010. Approximately 70% of the reported cases were from the southern region of Viet Nam.
Since the establishment of the National Dengue Control Programme in 1999, Viet Nam introduced the “dengue collaborator” model as a way to control and prevent the spread of infection. Using this model, 26 provinces were selected based on the severity of dengue transmission. Within these provinces, 10% to 20% of the most affected communes were assigned a “dengue collaborator” – a person tasked with removing mosquito breeding sites, exterminating larvae and educating people about dengue prevention for 70 to 100 households. The dengue collaborator visits five to seven households per day to check for the presence of mosquito larvae in water containers and to help clean or remove unwanted breeding sites. Dengue collaborators also introduce and monitor the use of guppy fish into still water sources to help reduce the mosquito larvae population. Provincial reports indicate that through the dengue collaborator model, the number of mosquito larvae is greatly reduced in communes and may directly contribute to their success in controlling and preventing dengue infection.
Chapter 5

The Way Forward
The launch of ASEAN Dengue Day marks a milestone in the partnership between WHO and ASEAN. The enthusiasm with which the event was embraced by Member States, WHO and ASEAN Secretariat is an indicator of strong collaboration. However, marking ASEAN Dengue Day is just the start of efforts to advocate dengue at the highest levels and to consolidate its prevention and control.

The Asia Pacific region is home to more than half the world’s population and the epicentre for many emerging diseases. SARS and avian influenza (bird flu) have affected several countries in this region, in some cases with significant health, social and economic effects. Due to the spread of disease across national boundaries, the International Health Regulations (2005) were revised to ensure global health security. The Regulations mandate WHO and its Member States to have in place the capacity to detect, assess and respond to events that may constitute a public health emergency of international concern.

In order to facilitate capacity building, WHO South-East Asia and Western Pacific Regions developed the Asia Pacific Strategy for Emerging Diseases in 2005. The Strategy was further revised in 2010 based on feedback from Member States, experiences of implementing APSED 2005 and lessons learnt from pandemic A(H1N1) 2009.

Capacity building under APSED adopts a horizontal approach and has resulted in demonstrable progress, particularly in the area of surveillance and response. During the WHO ASEAN Workshop on Priority Actions for Dengue Prevention and Control held in May 2011, it was recommended to incorporate dengue prevention and control measures into existing proven initiatives, rather than create a separate programme. The biregional Dengue Strategic Plan was reviewed alongside existing strategies, and the six components of the plan may be addressed through Integrated Vector Management and APSED. The Jakarta Call for Action for the Control and Prevention of Dengue also urged stakeholders to address dengue in an efficient and sustainable way.
Integrating dengue prevention and control activities into ongoing proven capacity development activities will optimize the use of resources and facilitate sustainability. Thus, dengue may be used as a pathfinder, in the same way influenza has been and continues to be used, for further strengthening indicator-based surveillance systems in countries and for strengthening national and regional laboratory capacity. Likewise, outbreak response, regional preparedness and other dengue-control measures are being addressed through the focus areas of APSED.

The combination of technical resources and the ability to mobilize regional mechanisms make WHO and ASEAN an effective alliance for the early detection and response to acute public health threats.

Let’s continue together to safeguard our region’s health.
Annex 1

Jakarta Call For Action On The Control And Prevention Of Dengue

15 June 2011, Jakarta, INDONESIA

WE, THE PARTICIPANTS of the ASEAN Dengue Conference from Brunei Darussalam, the Kingdom of Cambodia, the Republic of Indonesia, the Lao People’s Democratic Republic, Malaysia, the Republic of Union of Myanmar, the Republic of the Philippines, the Republic of Singapore, the Kingdom of Thailand and the Socialist Republic of Viet Nam, and other international development partners, held in Jakarta, Indonesia on 15 June 2011,

NOTE WITH CONCERN THAT;

1. It is estimated that nearly 50 to 100 million dengue infections with 20 000 deaths occur annually worldwide, 75% of which occurs in the Asia Pacific Region.
2. ASEAN Member States currently have the highest number of dengue infections in the Asia Pacific Region.
3. These dengue cases and deaths have socio-economic impact in ASEAN Member States.
4. ASEAN Member States have developed programs to prevent and control dengue infections, however these need to be aligned to regional strategies and involve all relevant stakeholders.
5. There has been progress in public-private partnerships; however, these need to be strengthened.
6. There is a need to sustain initial successes in global, regional, and national efforts to control and prevent this infection.
ACKNOWLEDGE THAT:

1. World Health Organization Global Strategy on Dengue, emphasizes on integrated vector management with community and intersectoral participations in which control is directed towards geographic areas of highest risk of transmission in the most cost effective manner.

2. As part of WHO Global Strategy on Dengue, the Asia Pacific Dengue Strategic Plan (2008-2015) was endorsed by Member States of the South East Asia Region and the Western Pacific Region focusing on reversing the increasing trend of dengue.

3. The Asia Pacific Dengue Strategic Plan is in line with the Asia Pacific Strategy for Emerging Diseases (APSED). APSED is a bi-regional strategy endorsed by Member States of the WHO South East Asia Region and Western Pacific Region, to strengthen national and regional capacities to manage and respond to emerging disease threats including Dengue.

4. Academic institutions, scientists, researchers have made significant contributions to understanding the disease which in turn has been widely used as the basis for evidence based management.

RECOGNIZE THAT:

1. ASEAN Member States have prioritized Dengue as one of the communicable diseases to be addressed, following the mandate of ASEAN Socio-Cultural Community Blueprint endorsed by ASEAN Leaders in 2009.

2. ASEAN Strategic Framework on Health Development (2010 – 2015), as endorsed by the ASEAN Health Minister Meeting in 2010, provided the operational guideline in the control of communicable diseases including dengue.

3. The 10th ASEAN Health Ministers Meeting in 2010 also agreed to designate every 15th of June as the ASEAN dengue day commencing in 2011 to increase public awareness of dengue infection.
4. ASEAN Expert Group on Communicable Diseases is the health subsidiary body to plan regional interventions on communicable diseases including dengue.

CALL UPON ALL STAKEHOLDERS OF ASEAN TO:

Strengthen Regional Cooperation:

1. To ensure continuous effort towards the prevention and control of dengue in ASEAN Member States by enhancing regional preparedness and capacity through integrated approaches to surveillance prevention, and timely response for an outbreak;
2. To strengthen national and regional alert and response capacities in an efficient and sustainable way;
3. To share information, experiences and best practices in improving the access to primary health care by people at risk/vulnerable groups of Dengue through regional workshops, seminars, and exchange visits among the ASEAN Member State;
4. To encourage the close collaboration and create networks among the public and private sectors and civil society in addressing the effort to prevent dengue transmission.

Strengthen Capacity in an efficient and sustainable way:

1. To put in place integrated vector management together with surveillance and control activities.
2. To improve core capacities of human resources.
3. To strengthen National Health Services for ensuring early diagnosis, and case management.
Promote Inter-sectoral Collaboration

1. To increase the awareness and understanding of non-health sectors of their roles and responsibilities in dengue prevention.

2. To move from reactive activities into long-term prevention and preparedness-driven activities involving health and non-health sectors.

3. To strengthen multi-sectoral planning to prevent and control dengue infection which has complex and multi-factorial dimensions.

4. To welcome and consider new and appropriate initiatives from public and private, health and non-health sectors, including but not limited to collaboration on research and development of dengue vaccines.

AND TO THIS END, the Participants in this Conference, RESOLVED TO SUBMIT this Call for Action for adoption in the Official Launch of ASEAN Dengue Day

15 June 2011

Jakarta, Indonesia
Brunei Darussalam


THEME: “Dengue is everybody’s concern, causing socio-economic burden but it’s preventable”

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. In the last 50 years, the incidence of dengue has increased 30-fold, with increasing geographic expansion to new countries. In the present decade, the spread from urban to rural setting is becoming prevalent. Environmental factors, particularly climate change may also be attributable in the emergence and re-emergence of dengue in the region with an increase in the number of outbreaks, breaching international borders.

Every year, it is estimated that nearly 50 million dengue infections occur worldwide. The WHO regions of South East Asia and the Western Pacific shoulder nearly 75% of current global dengue burden. In addition to health impacts, dengue presents substantial socio-economic burden on the communities of affected countries. Despite intensive efforts to prevent and control dengue, many countries are still facing many challenges in combating the disease.

Concerned that dengue has affected millions of people worldwide with the Southeast Asian Region being the most seriously affected area, the 10th ASEAN Health Ministers Meeting in Singapore in July 2010 endorsed the “ASEAN Dengue Day”, to be officially launched on 15th June 2011, as an annual advocacy campaign to increase awareness for dengue prevention.
and control at the regional and national level. The theme for the first ASEAN Dengue Day is “Dengue is everybody’s concern, causing socio-economic burden but its preventable”. The ASEAN Dengue Day is intended to increase the profile of dengue as a public health threat in the region and to complement national initiatives in generating international and local support to dengue prevention and control efforts. The impact of dengue to the people as caused by the loss of loved ones and the socio-economic burden it inflict to the nation and the region is of high concern.

Despite the low incidence of dengue fever in Brunei Darussalam, dengue cases have been continuously reported in the past decade. Only sporadic cases of dengue were reported during the 1990’s until 2009 (with the exception of the year 2003). On average, less than 50 cases were reported annually during that period. In the year 2003, we experienced our first outbreak whereby 160 cases were reported involving all four districts. However, with the cooperation and collaboration from various partner agencies and concerned stakeholders, the outbreak was successfully controlled.

In 2010, an increased in the number of cases detected was observed due to the availability of a new laboratory test (NS1 antigen test), whereby 298 cases were reported of which, 4 cases were classified as Dengue Haemorrhagic Fever. In the same year, for the first time, 2 deaths associated with complications of Dengue Haemorrhagic Fever were also reported.

Efforts in the prevention and control of dengue include health awareness programmes consisting of regular health educational talks to community groups such as villagers, schools, government agencies, private organizations and industries. With the cooperation and assistance of community leaders, cleanliness campaigns as well as vector control activities including source reduction methods have been regularly conducted. These efforts have been further intensified to allow for rapid response in outbreak containment. An early warning system provided by our disease surveillance network also gives further boost to the current efforts. Additionally, to strengthen clinical competencies in the diagnosis and management of dengue cases, continuous medical training on dengue management has
also been conducted. Research looking into serotyping, health risk impact assessment and entomological survey are also currently being undertaken.

Dengue prevention and control is a shared responsibility not only by the health sector but also the non-health sectors including the community involvement to work together in combating the disease. Each and every one of us plays an important role in dengue prevention and control. Our approach in controlling dengue needs to be more proactive rather than reactive which means moving from being response-driven to preparedness-driven. Our focus should be on long term prevention and control which require the effort and contribution of all, either as individuals, part of Organizations or as a community as a whole. All of us must continue the concerted efforts in an efficient and sustainable way to prevent and control dengue.

Cambodia

Dengue alert in Siem Reap

Officials in Siem Reap province are preparing this month for a possible dengue fever “epidemic” that authorities fear could be a repeat of a mass outbreak of the virus in 2007, officials said last week.

Chairman of the Dengue Fever Programme at the provincial health department, Bou Sarin, said dengue cases in Siem Reap had “exploded” in recent weeks, following an outbreak in Kampong Thom province. “Siem Reap province is facing a serious threat from dengue fever with the rainy season coming, and it may become more serious as it spreads from Kampong Thom, which is already in the midst of a province-wide epidemic,” he said.

Bou Sarin added that, according to data from Siem Reap provincial hospitals, 363 children have been admitted to hospitals after contracting dengue fever so far this year. Pesticides, which are used to clear mosquito breeding grounds, have proven effective in combating dengue infection in the past and have been distributed in local villages, Kros Sarath, deputy
director of the provincial health department, said. “[The virus] is only transmitted from mosquito to person, therefore the main thing people should do is use mosquito repellents and stay well covered while outside and keep their water stores clean,” he said.

In Sotr Nikum district, where pesticides has been used to remove mosquito larvae from wells, deputy district chief Ngin Mom said information sessions were still being held and booklets detailing preventative health measures distributed ahead of any potential outbreak.

“We have no reports of anyone who has contracted or died from the fever yet,” she said. However, Bou Sarin cautioned that although pesticides could be effective, they may not be enough to contain the virus in certain communities which have been hit by dengue outbreaks in the past. “One of the areas most at risk is Kampong Kdei [commune in Chi Kraeng district],” he said. “We’ve predicted that illness will seriously spread from there and we have to take steps to prevent it.”

ASEAN unites in battle against dengue

Jakarta (ANTARA News) - The first ASEAN Dengue Day was observed on June 15 at Jakarta’s National Museum on June 15, where a call was made to intensify regional cooperation to tackle the disease.

“This is the inaugural launch, and later it will be observed by every ASEAN member country annually,” Indonesian Health Minister Endang Rahayu Sedyaningsih said after dedicating ASEAN Dengue Day. According to the minister, around 50 to 100 million people are estimated to be infected with dengue fever each year, and 20 000 of these cases result in death world-wide. Up to 75 percent of the cases occur in the Asia-Pacific region.
In 2010, Southeast Asian health officials agreed to designate June 15 as ASEAN Dengue Day in a bid to raise awareness of and eventually curb the potentially fatal mosquito-borne disease. The date was chosen because it is the month when the number of dengue cases tends to peak in the 10 ASEAN member states. And Jakarta was chosen to host the inaugural ASEAN Dengue Day because it is the country with the highest incidence of dengue infection.

According to the World Health Organization (WHO), there may be as many as 50 million dengue infections annually throughout the world, with an estimated 500 000 cases of dengue hemorrhagic fever requiring hospitalization. WHO estimated 21 000 die due to dengue a year. Of the estimated 2.5 billion people at risk globally - two-fifths of the world’s population - about 1.8 billion people live in the 10 countries that make up the Association of Southeast Asian Nations (ASEAN).

Indonesia had around 101 000 infections in 2008, more than 700 of which proved fatal, WHO said. The country accounted for 48 percent of all dengue infections in Southeast Asia that year, down from 57 percent in 2006.

In Thailand, about 70 000 people were affected by dengue fever each year, which spends about 250 million baht ($8.2 million) treating the disease and a further 800 million baht on mosquito control each year.

At the launch of Dengue Day, the Association of Southeast Asian Nations (ASEAN) and WHO called on all sectors of society to unite in the battle against the disease, which has developed into a formidable threat to health in Asia. Activities are being conducted at regional, national and sub-national levels to raise awareness. These activities such as the ASEAN Dengue Conference, Regional Dengue Logo Competition, and other national initiatives help increase public and government awareness about the disease as well as promote commitment from all health and non-health stakeholders.
To highlight the Dengue Day function, an ASEAN Dengue Conference was held in Jakarta, June 13-14, 2011, and attended by around 150 delegates from ASEAN member countries. In the conference, the ASEAN health officials issued a Jakarta Call for Action Combating Dengue. The charter launched on the ASEAN Dengue Day called on all stakeholders in ASEAN to strengthen regional cooperation, improve efficient and sustainable capacity and form an cross sectoral networking.

At the national level, a National Dialog on Dengue was organized by the Indonesian health ministry on Tuesday (June 14) and participated in by representatives of the regional administrations. During the dialog event, the regional leaders expressed commitment to combating dengue by among other things intensifying the surveillance, promoting the public awareness of dengue threats, and providing adequate funds and logistics to fight the disease. “The heads of the regional administrations are also committed to producing local regulations on dengue prevention and control,” the health minister said.

Indonesia’s hot, humid climate make it an ideal breeding ground for the *Aedes aegypti* mosquito that transmits the infection. Although the number of dengue patients in Indonesia constitutes 10 percent of the world’s dengue patients, namely one million people, the prevalence rate is still quite low among other ASEAN member nations, namely 65.57 per 100 000 populations. The dengue prevalence in Malaysia is 140 per 100 000 people, and Brunei Darussalam 77.52 per 100 000. The number of dengue patients in Indonesia is around 150 000, with Bali having the highest prevalence at 337 per 100 000 residents, Jakarta 227/100 000, East Kalimantan 167/100 000 and Yogyakarta 144 per 100 000. Bali had a population of 3.9 million, 0.28 percent of which is vulnerable to dengue fever attacks. Dengue fever had also killed at least 29 people on the resort island of Bali last year, local health authorities said. They were among 10,230 residents who suffered from dengue fever between January and October 2010, Head of Bali Province’s Health Office dr. I Nyoman Suteja said.
Last year, of 986 residents who suffered from the dengue fever virus in Southeast Sulawesi Province, 13 died of the disease. In Palu, Central Sulawesi, dengue fever killed ten residents over the past eight months last year. Dengue fever outbreaks annually cost Indonesia Rp 3.1 trillion in financial losses that include Rp 343 billion in medical expenses, the health ministry estimated.

The world’s first clinical trials of a dengue fever vaccine being developed by France’s Sanofi Pasteur and due for release in 2014 are being carried out in 15 countries, including Indonesia, Thailand, the Philippines, Vietnam and Malaysia. The Thai trial, which began in 2009, involved 4000 children, while in Indonesia 2000 children in Jakarta, Bali and Bandung (West Java).

Health Minister Endang has expressed her hope that dengue vaccines will one day be made available free of charge to the public.

The Lao People’s Democratic Republic

Speech of the Health Minister- Dr. Bounkoang PHICHIT on the launching day of ASEAN Dengue Day, 15 June 2011, Lao People’s Democratic Republic.

His Excellency, Mr. Sinlavong Khoutphaythoun, Major of Vientiane Capital City, Dr. Reiko Tsuyuoka, WHO Lao People’s Democratic Republic, Mr. Souvankham Phapmisay, Cabinet office, Ministry of Education, Distinguished district governors from 9 districts of Vientiane Capital, ladies and gentlemen.

This great dengue combating campaign is falling on the period of cerebration of completion of the XIVth Party Congress and National Election of Lao’s Assembly Parliament Members. I am very pleasure to be invited to give a short speech in front of you in the important launching campaign with regards to protecting Lao’s people health to get ride of dengue infection.
First of all, I wish to since thanks and congratulate to all participation of representative from government agencies, educational institutions, religious committee, local authorities, and mass-organization from all sectors.

Distinguish guests, as being aware that dengue is viral disease, which is no specific treatment or vaccine available for prophylaxis purpose, but only symptomatic care is provided. Dengue presents as a health concern not only for country like Lao People's Democratic Republic, but also a regional and global concern to control it. The disease rapidly spread out in to new geographic areas of urban, no-urban and rural.

In Lao People's Democratic Republic, Dengue is an endemic disease in Lao People's Democratic Republic and epidemics occur every year since 1980, follow by a heavy outbreak in 1997, 2003, 2007 that is the year with recorded of severe dengue outbreak in Lao People's Democratic Republic. In 2010, I believe that you all witness the painful dengue outbreak, which appeared to be an exceptional year with a high number of dengue cases up to 27 000 cases being reported from March until November in almost provinces in the Lao People's Democratic Republic. I would say that the situation of 2010 dengue outbreak presented as dangerous signal to indicate of how severe of dengue are and stay close to our children, and all of us. Dengue is ready attack to all, if we have no action to combat it from now.

We therefore highly concern on dengue and I would like to share to our audiences both staying here and home to learn that dengue causes economic lost, i.e., if one family member hospitalised in average 11-12 days due to dengue, an average cost was USD 1349* to cover direct medical cost, hospital fees, other fees for care taker, as well as cost due to no productivity during hospitalization. Therefore, dengue is not just a patient who suffers directly to disease, but also affects to family economic status, or painfully lost their life. Now a day, we are experiencing of the global warming, which could be an influence factor to increase mosquito population and that is another threat for all of us!

Lao People's Democratic Republic, a tropical country in this pacific region was reminded by WHO that dengue will again attack unless government with collaboration of community
people share efforts to take immediate action to control it now. The immediate action means destroying of breeding sites and larvae cleanup. I would say that breeding sites would be found anywhere and in any un-lidded containers. I would like to ask you to pay attention to check larvae and clean it up in all water containers in your houses, your working place, schools, construction places, and temples.

Again, I would like to call you, as leaders, an attention to wipe out regularly the larvae and clean-up potential breeding areas from today until end of raining season. Do it in your house and every where with high commitment and responsibility to achieve “larvae- free community”. I do believe that if we all pro-act and take action to minimize Aedes and larvae, we may reach our goal to control dengue for sure!

As day thereafter, we together with other ASEAN population will joint our efforts to fight dengue practically. Lao People’s Democratic Republic, as ASEAN Member State and ASEAN’s population, we promise to be with you to combat dengue through possible interventions on vector control that initiate from individual household and working places and public areas toward community free of larvae then free of dengue.

Thank you.

**Malaysia**

**Liow: Dengue deaths down by 80% this year**

KUALA LUMPUR: The number of dengue-related cases and deaths fell by 57% and 80% respectively this year compared to the same period last year.

Health Minister Datuk Seri Liow Tiong Lai said as of 12 June 2011, the number of reported cases stood at 9224 compared to last year’s figure of 21 309 during the same period. The number of deaths has also dropped by 80% to 14 compared to 69 in the previous year. A total of 46 171 dengue cases and 134 deaths were recorded last year.
Liow attributed the reduction to the strong community support towards the Communication for Behavioural Impact (Combi) campaign against dengue. There are currently 2126 Combi projects, of which 205 were by nongovernmental Organizations.

“Preventing dengue is a joint responsibility. Our focus is to mobilise the community and help them realise that their role in reducing the breeding of *Aedes* mosquitoes is the key,” he said at the local-level Asean Dengue Day function and relaunch of the national-level Combi campaign yesterday.

Deputy Prime Minister Tan Sri Muhyiddin Yassin said efforts to combat the epidemic must continue on a daily basis as the number of cases and deaths could happen at any time. “Our target is to have zero deaths as one death is too many,” he said.

On the dengue vaccine which is being developed by the Health Ministry and pharmaceutical company Sanofi-Aventis, Liow said it would be available by 2015.

The Union of Myanmar

Photo below shows one of the promotional items distributed by the government during Dengue Day Celebrations in Myanmar.
GenSan raises alert vs dengue; 4 deaths confirmed in 5 months

GENERAL SANTOS CITY, June 16 -- Health authorities here have raised anew the alert level against the deadly dengue fever, which already claimed at least four lives during the last five months.

Dr. Jacinto Makilang, City Integrated Health Services Office (CIHSO) chief, said Thursday they recorded at least 143 confirmed dengue cases, including four deaths, in the city's 26 barangays from January to May this year. He said this year's figure dropped by 37 cases or around 20 percent but the number of fatalities has increased by three cases as compared to last year.

CIHSO records showed that the confirmed deaths this year due to the mosquito-borne disease were recorded in Barangays Labangal, Buayan, Fatima and Lagao. “We can't be complacent about this disease. It's important that we should all remain vigilant as the number of cases might increase within the next few weeks because of the current rainy season,” Makilang said.

Dengue is an acute infectious viral disease, which usually affects infants and young children. It is transmitted by the day-biting mosquito known as *Aedes aegypti*. In June last year, the city recorded a sudden surge of 118 dengue cases during the onset of the rainy season, after posting 180 cases for the first five months.

Makilang said they intensified anew their community-level information and education campaigns on the preventive measures against the infection and spread of dengue in the city. He said they were monitoring local public and private schools for the possible emergence of dengue cases among school children and students.
The health official advised residents to observe the Department of Health’s 4-S strategy to help avert the further spread of dengue. 4-S stands for search and destroy, self-protection, seek early treatment and say no to indiscriminate fogging. “The best way to combat dengue is through sustained cleanliness and sanitation. We have to clean up our surroundings on a regular basis and get rid of possible breeding places of dengue-carrying mosquitoes,” Makilang said.

He urged residents to immediately seek proper medical assistance the moment they feel the initial manifestations or symptoms of the disease, which may include erratic high fever, persistent vomiting, inability to take oral fluids, persistent abdominal pain, restlessness, bleeding from nose and gums and passage of black stools. (PNA)

Singapore

Singapore marks ASEAN Dengue Day By Evelyn Choo

Singapore and nine other ASEAN members marked the inaugural ASEAN Dengue Day on Wednesday with a concerted fight against the virus, which is expected to be most prevalent in the region this month.

In Singapore, an institute has been recognised as a global centre for reference and research by the World Health Organization. It is hoping that this collaboration would advance the development of a non-invasive dengue test kit - the first of its kind in the world. A simple swab of a patient’s inner cheek could determine whether he has the virus or not. This non-invasive procedure was once considered a far-fetched idea by scientists. But researchers at Singapore’s Environmental Health Institute have proven that it is not.

Grace Yap, senior research officer, Environmental Health Institute, said: “Contemporary test kits have always been based on blood. This will be the first of its kind that utilises saliva as a diagnostic fluid. “Because it utilises saliva, the non-invasiveness is definitely a benefit. The benefits of a pregnancy test kit are numerous, and hopefully this particular assay can go
down the same route as well.” Using the test kit, one will be able to find out if one has been infected with dengue in just 90 minutes. Researchers are hoping that the test kit could cost around S$20 - much cheaper than existing blood tests in the market.

The team is now looking for a business partner and hopes to produce a prototype in about three years. It is working with two dengue endemic countries in the region - Cambodia and Sri Lanka - to collect substantial data from various environments.

Another development is a new and improved mosquito trap - called the Gravitrap - which is being tested in various dengue clusters. These developments come at a time when the incidence of dengue approaches the peak of a six- to seven-year cycle in Singapore. The first 22 weeks of 2011 also saw a four per cent on-year increase in cases here.

While the National Environment Agency will do its best to arrest the rising trend, Singaporeans may face a tougher challenge when the incidence of dengue is brought down. Minister for the Environment and Water Resources, Vivian Balakrishnan, said: “Because of the success in the last few years in bringing down the incidence of dengue, the paradox is that (fewer people) will therefore have immunity. “And therefore you can expect that if we don’t control the vectors, the mosquitoes, adequately, then you will see a significant increase in dengue in Singapore.” Speaking to reporters on the sidelines of the ASEAN Dengue Day, the minister also advises everyone to take necessary precautions - especially as Singapore enters the warmer months.
ส. เทียน ปรมานิต รัฐมนตรีว่าการกระทรวงสาธารณสุข กล่าวว่า ที่ประชุมมีมติรับฟังการผลิตภัณฑ์อร่ามสำหรับการรักษาโรคอุบัติภัย ซึ่งมีการผลิตภัณฑ์ดังกล่าว ที่มีประสิทธิภาพในการรักษาโรคอุบัติภัย ใน 2 ราย ทั้งหมด ทำให้สามารถใช้สำเร็จได้

ภายหลังจากนั้น รัฐมนตรีว่าการกระทรวงสาธารณสุข กล่าวว่า ที่ประชุมมีมติรับฟังการผลิตภัณฑ์อร่ามสำหรับการรักษาโรคอุบัติภัย ใน 2 ราย ทั้งหมด ทำให้สามารถใช้สำเร็จได้

สำหรับผลิตภัณฑ์อร่ามสำหรับการรักษาโรคอุบัติภัยใน 2 ราย ทั้งหมด ทำให้สามารถใช้สำเร็จได้
จากการสอบถามผ่าน ถามว่าผู้ป่วยและผู้เสียชีวิตจาก)dengue ค่อนข้างเยอะ จำนวนผู้ป่วยโรคไข้เลือดออกจะสูงที่สุดในเดือนมีนาคม ที่ทางการสุขภาพต้องระวัง และต้องมีการป้องกันให้กับผู้ที่มีอาการเลือดออกเดือนมีนาคม ผู้ที่ทำงานอยู่ในช่วงนี้ ก่อนหน้านี้มีเรื่องที่เกี่ยวข้องกับโรค ที่ทางการสุขภาพต้องระวัง แต่เดี๋ยวนี้มีการป้องกันโรคไข้เลือดออกมากขึ้น

ทั้งนี้ต้องขอให้ปฏิบัติตามคำแนะนำของทางการสุขภาพและเจ้าหน้าที่การสุขภาพที่มีอยู่อย่างเคร่งครัด อย่างไรก็ตาม ผู้ที่มีอาการตามที่กล่าวมาควรได้รับการรักษาจากแพทย์นั้น ที่ต้องการให้รักษาให้ดี แต่ยังไม่สามารถให้การรักษาที่ดีที่สุดได้ แต่การรักษาที่ดีที่สุดจะต้องรักษาโรคต่อไป ผู้ที่มีอาการไข้เลือดออกควรรักษาต่อไป แต่ยังไม่สามารถให้การรักษาที่ดีที่สุดได้ แต่การรักษาที่ดีที่สุดจะต้องรักษาโรคต่อไป ผู้ที่มีอาการไข้เลือดออกควรรักษาต่อไป

แหล่งข้อมูล: กรมควบคุมโรค กรมสุขภาพจิต กรมสนับสนุนบริการสุขภาพ
ACTION AGAINST DENGUE: DENGUE DAY CAMPAIGNS ACROSS ASIA
HCM City plans for Dengue Day

CAN THO — The Ministry of Health and the Can Tho City People’s Committee yesterday kicked off a meeting to celebrate ASEAN Dengue Day on June 15.

The ministers of health in member countries in ASEAN last year decided to establish the day to raise awareness for dengue prevention in the region. According to the World Health Organization, around 2.5 billion people worldwide currently are at risk of dengue fever infections. Among them, 70 per cent are living in Asia-Pacific countries.

More than 500 delegates of foreign embassies in Viet Nam and health departments in southern provinces attended the meeting. Deputy Minister of Health Nguyen Ba Thuy said that dengue fever could be prevented if people’s awareness about the disease was improved.

The Vietnamese Government has given priority to dengue fever prevention by including it in disease-prevention programmes and increasing funds for prevention each year, Thuy said. Although the annual number of patients with dengue fever has fallen, it still remains too high because of the lack of awareness about dengue fever prevention and the shortage of health staff in districts and communes.

In Viet Nam, dengue fever occurs in nearly all of the 20 southern provinces and cities, several provinces in the central and Tay Nguyen (Central Highlands) region. Last year, dengue fever affected 125 000 patients nationwide, and 104 died. In the first five months of this year, the country reported more than 15 000 patients with dengue fever. Eleven of them died. Dengue fever often breaks out during the rainy season in September and October.

Cambodia, Laos, the Philippines, Malaysia and Viet Nam all have rather high number of patients with dengue fever.— VNS
Annex 3 - Key Facts about Dengue

- Dengue is a mosquito-borne infection that causes a severe flu-like illness, and sometimes a potentially lethal complication called dengue haemorrhagic fever.
- Global incidence of dengue has grown dramatically in recent decades.
- About two fifths of the world’s population are now at risk.
- Dengue is found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas.
- Dengue haemorrhagic fever is a leading cause of serious illness and death among children in some Asian countries.
- There is no specific treatment for dengue, but appropriate medical care frequently saves the lives of patients with the more serious dengue haemorrhagic fever.
- The only way to prevent dengue virus transmission is to combat the disease-carrying mosquitoes.

Dengue is a mosquito-borne infection that in recent decades has become a major international public health concern. Dengue is found in tropical and sub-tropical regions around the world, predominantly in urban and semi-urban areas.

Dengue haemorrhagic fever (DHF), a potentially lethal complication, was first recognized in the 1950s during dengue epidemics in the Philippines and Thailand. Today DHF affects most Asian countries and has become a leading cause of hospitalization and death among children in the region.

There are four distinct, but closely related, viruses that cause dengue. Recovery from infection by one provides lifelong immunity against that virus but confers only partial and transient protection against subsequent infection by the other three viruses. There is good evidence that sequential infection increases the risk of developing DHF.
Global burden of dengue

The incidence of dengue has grown dramatically around the world in recent decades. Some 2.5 billion people – two fifths of the world’s population – are now at risk from dengue. WHO currently estimates there may be 50 million dengue infections worldwide every year.

In 2007 alone, there were more than 890 000 reported cases of dengue in the Americas, of which 26 000 cases were DHF.

The disease is now endemic in more than 100 countries in Africa, the Americas, the Eastern Mediterranean, South-east Asia and the Western Pacific. South-east Asia and the Western Pacific are the most seriously affected. Before 1970 only nine countries had experienced DHF epidemics, a number that had increased more than four-fold by 1995.

Not only is the number of cases increasing as the disease is spreading to new areas, but explosive outbreaks are occurring. In 2007, Venezuela reported over 80 000 cases, including more than 6 000 cases of DHF.

Some other statistics:

- During epidemics of dengue, infection rates among those who have not been previously exposed to the virus are often 40% to 50%, but can reach 80% to 90%.
- An estimated 500 000 people with DHF require hospitalization each year, a very large proportion of whom are children. About 2.5% of those affected die.
- Without proper treatment, DHF fatality rates can exceed 20%. Wider access to medical care from health providers with knowledge about DHF - physicians and nurses who recognize its symptoms and know how to treat its effects - can reduce death rates to less than 1%.

The spread of dengue is attributed to expanding geographic distribution of the four dengue viruses and their mosquito vectors, the most important of which is the predominantly urban...
species *Aedes aegypti*. A rapid rise in urban mosquito populations is bringing ever greater numbers of people into contact with this vector, especially in areas that are favourable for mosquito breeding, e.g. where household water storage is common and where solid waste disposal services are inadequate.

**Transmission**

Dengue viruses are transmitted to humans through the bites of infective female *Aedes* mosquitoes. Mosquitoes generally acquire the virus while feeding on the blood of an infected person. After virus incubation for eight to 10 days, an infected mosquito is capable, during probing and blood feeding, of transmitting the virus for the rest of its life. Infected female mosquitoes may also transmit the virus to their offspring by transovarial (via the eggs) transmission, but the role of this in sustaining transmission of the virus to humans has not yet been defined.

Infected humans are the main carriers and multipliers of the virus, serving as a source of the virus for uninfected mosquitoes. The virus circulates in the blood of infected humans for two to seven days, at approximately the same time that they have a fever; *Aedes* mosquitoes may acquire the virus when they feed on an individual during this period. Some studies have shown that monkeys in some parts of the world play a similar role in transmission.

**Characteristics**

Dengue fever is a severe, flu-like illness that affects infants, young children and adults, but seldom causes death.

The clinical features of dengue fever vary according to the age of the patient. Infants and young children may have a fever with rash. Older children and adults may have either a mild fever or the classical incapacitating disease with abrupt onset and high fever, severe headache, pain behind the eyes, muscle and joint pains, and rash.
Dengue haemorrhagic fever (DHF) is a potentially deadly complication that is characterized by high fever, often with enlargement of the liver, and in severe cases circulatory failure. The illness often begins with a sudden rise in temperature accompanied by facial flush and other flu-like symptoms. The fever usually continues for two to seven days and can be as high as 41°C, possibly with convulsions and other complications.

In moderate DHF cases, all signs and symptoms abate after the fever subsides. In severe cases, the patient’s condition may suddenly deteriorate after a few days of fever; the temperature drops, followed by signs of circulatory failure, and the patient may rapidly go into a critical state of shock and die within 12 to 24 hours, or quickly recover following appropriate medical treatment (see below).

**Treatment**

There is no specific treatment for dengue fever.

For DHF, medical care by physicians and nurses experienced with the effects and progression of the complicating haemorrhagic fever can frequently save lives - decreasing mortality rates from more than 20% to less than 1%. Maintenance of the patient’s circulating fluid volume is the central feature of DHF care.

**Immunization**

There is no vaccine to protect against dengue. Although progress is underway, developing a vaccine against the disease - in either its mild or severe form - is challenging.

- With four closely related viruses that can cause the disease, the vaccine must immunize against all four types to be effective.
- There is limited understanding of how the disease typically behaves and how the virus interacts with the immune system.
- There is a lack of laboratory animal models available to test immune responses to potential vaccines.
Despite these challenges, two vaccine candidates have advanced to evaluation in human subjects in countries with endemic disease, and several potential vaccines are in earlier stages of development. WHO provides technical advice and guidance to countries and private partners to support vaccine research and evaluation.

**Prevention and control**

At present, the only method of controlling or preventing dengue virus transmission is to combat the vector mosquitoes.

In Asia and the Americas, *Aedes aegypti* breeds primarily in man-made containers like earthenware jars, metal drums and concrete cisterns used for domestic water storage, as well as discarded plastic food containers, used automobile tyres and other items that collect rainwater. In Africa the mosquito also breeds extensively in natural habitats such as tree holes, and leaves that gather to form “cups” and catch water.

In recent years, *Aedes albopictus*, a secondary dengue vector in Asia, has become established in the United States, several Latin American and Caribbean countries, parts of Europe and Africa. The rapid geographic spread of this species is largely attributed to the international trade in used tyres, a breeding habitat.

Vector control is implemented using environmental management and chemical methods. Proper solid waste disposal and improved water storage practices, including covering containers to prevent access by egg-laying female mosquitoes are among methods that are encouraged through community-based programmes.

The application of appropriate insecticides to larval habitats, particularly those that are useful in households, e.g. water storage vessels, prevents mosquito breeding for several weeks but must be re-applied periodically. Small, mosquito-eating fish and copepods (tiny crustaceans) have also been used with some success.
During outbreaks, emergency vector control measures can also include broad application of insecticides as space sprays using portable or truck-mounted machines or even aircraft. However, the mosquito-killing effect is transient, variable in its effectiveness because the aerosol droplets may not penetrate indoors to microhabitats where adult mosquitoes are sequestered, and the procedure is costly and operationally difficult. Regular monitoring of the vectors' susceptibility to widely used insecticides is necessary to ensure the appropriate choice of chemicals. Active monitoring and surveillance of the natural mosquito population should accompany control efforts to determine programme effectiveness.

[Also available at http://www.who.int/mediacentre/factsheets/fs117/en/index.html]
Annex 4 - Relevant Publications

**THE DENGUE STRATEGIC PLAN FOR THE ASIA PACIFIC REGION 2008-2015**
World Health Organization

Dengue Strategic Plan for the Asia Pacific Region 2008-2015

**DENGUE GUIDELINES FOR DIAGNOSIS, TREATMENT, PREVENTION AND CONTROL**
New Edition 2009

**ASIA PACIFIC STRATEGY FOR EMERGING DISEASES 2010**

Asia Pacific Strategy for Emerging Diseases 2010

**GLOBAL STRATEGIC FRAMEWORK FOR INTEGRATED VECTOR MANAGEMENT**

Global Strategic Framework for Integrated Vector Management

**ASEAN SOCIO-CULTURAL COMMUNITY BLUEPRINT**

ASEAN Socio-Cultural Community Blueprint