

## What is dengue?

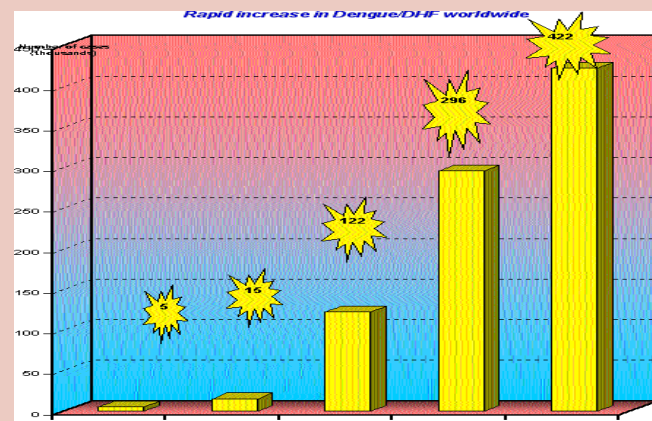
Dengue is a flu-like 'often severe' viral illness spread amongst humans by the bites of *Aedes* mosquitoes. High fever, severe headache, muscle and joint pain, nausea and vomiting are common symptoms and are frequently accompanied by a rash.

## What is dengue haemorrhagic fever?

Dengue haemorrhagic fever (DHF) is a sometimes fatal complication of dengue characterized by high fever and a tendency to bleed. After a few days of fever the patient's condition may rapidly deteriorate, leading to circulatory failure. Death can follow within 12 to 24 hours if proper hospital care is not provided.

### Facts about dengue and DHF:

- Dengue and DHF are now endemic in more than 100 tropical and subtropical countries/areas of the Americas, the Eastern Mediterranean, South-East Asia, the Western Pacific and Africa.
- There is no specific treatment for dengue and DHF. However, appropriate care provided by experienced physicians and nurses frequently saves the lives of DHF patients. Maintaining the proper body fluid balance is paramount to managing DHF.
- Dengue often spreads rapidly, affecting a great number of people during epidemics. In the most severely affected countries/areas children are the most vulnerable group.
- Dengue is an environmental issue. Population growth, particularly in urban areas, and inadequate water and sanitation services have produced conditions favourable for mosquitoes to breed and viruses to spread.



## What is the burden of disease caused by dengue and DHF?

**1998 witnessed a dengue and DHF pandemic the likes of which had never been seen before: 1.2 million cases were reported to WHO from 56 countries. This is a small proportion of the estimated number of cases.**

### WHO estimates that:

- at least 2.5 billion people –two-fifths of the world's population –are at risk of infection;
- there are 50 million infections worldwide every year resulting in around 24 000 deaths, mostly among children.



A DHF patient under treatment in a district hospital in Cambodia during the 1998 epidemic

***Aedes aegypti*, the most important dengue mosquito, breeds in collections of water inside and close to dwellings. Domestic water storage containers such as earthenware jars, metal drums and concrete cisterns are commonly infested, as are discarded tyres, food containers and flower vases.**

## What is the impact of dengue and DHF?

Dengue and DHF represent a significant economic burden on the communities affected. They result in:

- loss of lives;
- expenses to the family for the hospitalization and care of the patient, in addition to travel costs;
- loss of work among patients and their caretakers;
- considerable expense to local municipalities for vector control activities;
- disruption of health care services and economies, including loss of tourism revenue.

**The cost of control measures and medical services during the 1981 epidemic of DHF in Cuba was over US\$ 100 million.**

## What measures are being taken to prevent and control dengue and DHF?

To reduce the burden caused by dengue and DHF, WHO is promoting implementation of the Global Strategy.



Educating children about safe water storage

## What is the Global Strategy?

The Global Strategy provides the basis for regional and national programme planning and integrates the following essential elements:

### 1. Application of mosquito control measures through:

- removal or protection of containers where mosquitoes breed;
- chemical control via application of insecticides to kill larvae in water containers or as space sprays to kill adult mosquitoes during outbreaks;
- biological control of mosquitoes by small fish or tiny predatory freshwater crustaceans called *copepods* that are very effective in controlling mosquitoes in water storage containers and wells;
- improvement of water and sanitation services.

**2. Active surveillance of disease, virus transmission and mosquitoes,** based on a strong health information system.

**3. Emergency preparedness** for dengue outbreaks:

- development of emergency and contingency plans;
- education of the medical community;
- emergency mosquito control using health communication strategies to inform the population about actions to take.

**4. Capacity building and training** in order for health workers to improve their skills and actions on surveillance, laboratory diagnosis, management of the illness and mosquito control.



# Dengue and DHF

**5. Social mobilization** of communities and decision-makers to incorporate dengue prevention and control in their aims and activities.

**6. Changes in behaviour** through effective communication strategies aimed at influencing behaviour among individuals, households, communities, institutions and decision-makers.

## What future action is planned?

■ In November 2000 an international conference on dengue and DHF in Chiang Mai, Thailand led to the adoption of the Chiang Mai Declaration on dengue and DHF. The participants committed themselves to:

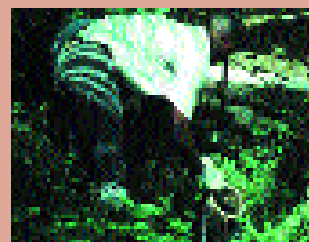
- endorse the WHO Global Strategy;
- advocate increased political commitment and resources;
- promote partnerships involving both the private and public sectors;
- build and reinforce health systems for surveillance, treatment, prevention and control;
- develop new and improved tools and strategies for prevention and control.

■ The UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR) has prioritized research activities to:

- develop and evaluate improved diagnostic methods for early detection;
- accelerate the development and evaluation of dengue vaccines;
- support mosquito control studies;
- promote the establishment of research networks using the web-based *DengueNet* surveillance system (currently under development).



Water storage containers should be made mosquito-proof



To eliminate rainwater breeding sites of the dengue mosquito, removal of unwanted containers is indispensable

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## PROGRESS MADE SO FAR

- The International Federation of the Red Cross and Red Crescent Societies (IFRC), USAID and WHO are jointly promoting the development of emergency and long-term mosquito control strategies in endemic countries/areas.
- A tetravalent vaccine effective against all four dengue viruses has been successfully developed by Mahidol University in Bangkok in collaboration with WHO. Clinical trials of this candidate vaccine in adults are in progress.
- Research activities and clinical studies on case management in Thailand have been used in hospitals to reduce the proportion of DHF patients who die from 13% in the early 1950s to less than 0.3% today.
- Research in the area of diagnosis by a WHO Collaborating Centre has resulted in the development of a diagnostic blood test which is now in use in laboratories worldwide.
- Most endemic countries from three WHO regions (AMRO, SEARO and WPRO) have set up national dengue programmes incorporating some or all of the elements of the Global Strategy.

## FLASH TIPS

*Did you know that...*

*... dengue fever is the most important mosquito-borne viral disease in humans?*

*... there are four different dengue viruses, therefore a person can be infected four times?*

*... you should never take aspirin if you have dengue because it may enhance your tendency to bleed?*

*... in some countries dengue fever is known as 'breakbone fever' because it frequently causes severe joint and muscle pain?*

*... measures such as elimination of larval habitats at home and the use of household aerosol insecticides are indispensable to control the mosquito?*

## Further information from:

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