

## Report on

## Dengue



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**Report of the Scientific Working Group  
meeting on Dengue**

Geneva, 1–5 October 2006

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## Executive summary

Dengue is the most rapidly spreading vector borne disease. An estimated 50 million dengue infections occur annually and approximately 2.5 billion people live in dengue endemic countries. Because of the rapidly increasing public health importance of this disease, in 1999 dengue was incorporated in the portfolio of the UNICEF, UNDP, World Bank, WHO Special Programme for Research and Training in Tropical Diseases (TDR). The 2002 World Health Assembly Resolution WHA55.17 urged greater commitment to dengue among Member States and WHO; of particular significance is the 2005 Revision of the International Health Regulations (WHA58.3), which includes dengue as an example of a disease that may constitute a public health emergency of international concern.

It was against this background that the Dengue Scientific Working Group of 60 experts from 20 countries including WHO staff from four Regions and Headquarters met in Geneva in October 2006 to review existing knowledge on dengue and establish priorities for future dengue research aimed at improving dengue treatment, prevention and control. The goal of the Scientific Working Group was to outline a research agenda by identifying bottlenecks and making detailed and specific research recommendations. The SWG wanted to identify areas of research that could lead to tangible benefits for people in disease endemic countries within the coming years as well as outline a strategic vision for applied and basic research from which benefits would be felt in the medium to long term.

As a result of major demographic changes, rapid urbanization on a massive scale, global travel and environmental change, the world, particularly the tropical world, faces enormous future challenges from emerging infectious diseases. Dengue epitomizes these challenges. In the early years of the 21<sup>st</sup> Century we are collectively failing to meet the challenge posed by dengue as the disease spreads unabated and almost 40% of the world's population now lives at risk of contracting the disease. There is currently no specific clinically useful diagnostic test, no drugs, and no vaccine, and we have failed to widely or effectively implement existing vector control and clinical management measures that we know would help to reduce the vector population and reduce case fatality rates. Yet there has never been a more optimistic time to be involved in dengue and dengue research, and interest in the disease has attracted a new generation of talented and committed clinicians and scientists. Modern science, from clinical medicine to basic research on pathophysiology, drug and vaccine discovery, through to the social and behavioural sciences and vector biology and control, offers a unique opportunity to make a tangible and substantial impact on dengue over the next decade. But in order to achieve what

is possible, a paradigm shift is required in our current approach. The dengue research community needs to: push for much greater implementation of existing knowledge to reduce case fatality rates, extend basic and clinical research to understand the underlying pathophysiology, aid diagnostics and drug discovery and further improve clinical outcome, speed up the development of vaccine candidates including moving as quickly as possible to efficacy trials, and gather evidence for implementing best practices for control of the vector.

All of this is possible in the next ten years. But to achieve this, dengue needs a much stronger voice within dengue endemic countries and within the global public health community to persuade society, funding agencies and policy-makers of the importance of the disease. We are at a critical epidemiological juncture in infectious, particularly viral, emerging diseases at the start of the 21<sup>st</sup> Century, and in many ways dengue serves as a model for how we might meet that challenge. The lessons learned from dengue will have implications for a number of other diseases and our approach to their control. The implementation of the best of existing knowledge and practice supplemented by future research applied in an integrated, holistic fashion can be expected to significantly change the lives of individuals living in dengue-endemic countries in the coming years. The Scientific Working Group hopes this research agenda will help provide a strategic plan for how we might collectively achieve the aims of reducing morbidity and mortality based on better understanding of the pathophysiology associated with dengue, on implementation strategy and on reduction of virus transmission.

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