Towards Sustaining Behavioural Impact in Dengue Prevention and Control

by


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Abstract

International recognition of the vital importance of social mobilization for prevention and control of dengue fever and dengue haemorrhagic fever has gathered pace in recent years. At the beginning of 2001, an international team of social scientists, communication specialists, and national programme managers were brought together to prepare a step-by-step guide on how to plan and manage sustainable interventions addressing behavioural issues associated with the prevention and control of DF/DHF (Planning Social Mobilization and Communication for Dengue Prevention and Control: A Step-by-Step Guide, Ed. Will Parks and Linda S Lloyd, WHO, 2004, in press, WHO/CDS/WMC/2004.2). In the first half of 2002, the draft guide was reviewed by a panel of international experts in the fields of dengue prevention and control, vector control, the diverse social sciences, and dengue programme management. Funds from the WHO Mediterranean Centre for Vulnerability Reduction and a Director’s Initiative Grant from the Special Programme for Research and Training in Tropical Diseases supported the writing and review process. The guide was revised, translated into Spanish, and pre-tested at two regional workshops, funded by the U.S. Centers for Disease Control and Prevention. The first workshop was held in the WHO Western Pacific Region (in partnership with the WHO South-East Asia Region) and the second was held in the Region of the Americas in partnership with the Pan American Health Organization and the Environmental Health Project of the United States Agency for International Development. The workshops, held in the first half of 2003, provided additional feedback and enabled final editorial changes to be made to the document.

This paper provides a brief overview of the guide’s purpose and content, and the progress made so far in responding to the international call for the preparation of a package of tools, approaches and guidelines that will assist national programmes in the design and implementation of appropriate behaviour change interventions.

Keywords: Social mobilization, behavioural impact, Aedes aegypti, dengue prevention and control.
Introduction

Dengue fever (DF) and its more severe form, dengue haemorrhagic fever (DHF), are causing ever-increasing levels of illness and death. An estimated 50 million dengue infections occur every year, including 500,000 cases of DHF that require hospitalization – equivalent to approximately one DHF case every minute. At least 21,000 deaths from DHF occur every year, mostly among children – equivalent to one young life lost to DHF every 25 minutes. Some 40% of the world’s population (2.5 billion people) now live in areas where transmission occurs. The disease is endemic in the Americas, the Eastern Mediterranean, South-East Asia, the Western Pacific, and in tropical areas of Africa. Recent research shows that the global burden of dengue could be in the same order of magnitude as many other infectious diseases such as malaria, tuberculosis, and sexually transmitted infections (excluding HIV/AIDS), the prevention and control of which receive far greater political and financial support than dengue(1,2).

To date, no specific medications are available for the treatment of dengue although early diagnosis and timely and appropriate clinical management of DHF can reduce case fatality rates. Vaccine candidates effective against all four virus serotypes are under development. However, their availability for public health use is at least several years away. Even then, it is likely that they will only complement rather than replace existing prevention and control measures. For the time being, the only methods for preventing and controlling DF/DHF are to control the mosquito vector(s) and to reduce human–vector contact. A range of Aedes control methods now exist, many of which have been tried and proven for different situations (Box 1).

**Box 1. Aedes Control Methods**

- Environmental sanitation measures to reduce mosquito breeding sites, such as the physical management of water containers (e.g. mosquito-proof covers for water storage containers, polystyrene beads in water tanks), better designed and reliable water supplies, and recycling of solid waste such as discarded tyres, bottles, and cans.
- Biological methods (e.g. fish, copepods – small crustaceans that feed on mosquito larvae) to kill or reduce larval mosquito populations in water containers.
- Chemical methods against the mosquito’s aquatic stages for use in water containers (e.g. temephos sand granules).
- Chemical methods directed against adult mosquitoes, such as insecticide space sprays or residual applications.
- Personal protection through use of repellents, vaporizers, mosquito coils, and insecticide-treated screens, curtains, and bednets (for daytime use against Aedes).

Among those methods, there is often heavy reliance on space spraying of insecticide for adult mosquito control. This method must be repeated at frequent intervals, its cost is high, and its effectiveness is variable(3). The main vector, Aedes aegypti prefers to rest inside houses, typically in sheltered places such as dark corners and cupboards, where drifting insecticide spray droplets do not easily penetrate when the aerosol is applied outdoors, especially if householders do not comply with requests to open their doors and windows. Moreover,
adult mosquito populations quickly rebound after spraying because larval habitats remain largely unaffected\(^4\). Nevertheless, public trust in such measures is often high and complacency only increases the challenge of explaining the need for community involvement in the control of larval habitats\(^5\).  

The global strategy

Until effective, safe, and affordable vaccines become available, the Global Strategy for the Prevention and Control of Dengue Fever and Dengue Haemorrhagic Fever, enunciated in 1995, recommends the application of integrated vector control measures, with community and intersectoral participation\(^6\). In 2002, the necessary political will for the strategy’s implementation was formally reflected by the 55th World Health Assembly’s adoption of a Resolution on “Dengue fever and dengue haemorrhagic fever prevention and control” (Resolution WHA55.17\(^7\)). The Strategy consists of five main elements (Box 2).

Most endemic Member Countries in WHO South-East Asia and Western Pacific Regions have prepared their action plans based on the Global (and Regional) Strategy and using the available infrastructure and resources. The Pan American Health Organization (PAHO) has drawn up guidelines for its Member countries, recommending that they introduce and promote more intersectoral actions in their prevention and control programmes\(^8,9\). Many countries have embraced this approach and have incorporated it into their programmes.

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<th>Box 2. The Global Strategy for Prevention and Control of DF/DHF</th>
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<td>• Selective, integrated mosquito control with community and intersectoral participation, in which control is directed towards geographical areas at highest risk of transmission, integrating all appropriate methods in the most cost-effective and economical manner;</td>
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<td>• Active disease surveillance based on strong health information systems, involving clinical and laboratory-based dengue surveillance for early detection of epidemics and vector surveillance for monitoring and evaluation of control programmes;</td>
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<td>• Emergency preparedness, necessitating development of emergency and contingency plans, including education of the medical community, hospitalization plans, case management, and emergency vector control;</td>
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<td>• Capacity building and training, in surveillance, laboratory diagnosis, case management, and vector control at professional, supervisory, technical, and field levels; and</td>
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<td>• Vector control research, including studies on vector biology and control, disease relationships, design and management of control programmes, including social and economic approaches, and cost-benefit analyses.</td>
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The need for behaviourally-focused social mobilization and communication

To date, ministries of public health in the majority of dengue-endemic countries (and those countries prone to epidemics) have
been unable to mount effective and sustainable behaviour change interventions with community involvement. Social mobilization and communication strategies for dengue prevention and control and the research results that form the basis for these strategies, have been largely the pursuit of individual social scientists, university departments and nongovernmental organizations (NGOs) implementing studies or field trials that are peripheral to national programme goals. Such strategies have tended to focus at the household and community levels, with less emphasis being given to broader social changes needed in such domains as urban planning, municipal services such as water supply and solid waste management, industry, and government institutions.


In the first half of 2002, the draft guide was reviewed by an international panel of experts in the fields of dengue prevention and control, vector control, the diverse social sciences, and dengue programme management. Funds from the WHO Mediterranean Centre for Vulnerability Reduction (WMC) and a Director’s Initiative Grant from the Special Programme for Research and Training in Tropical Diseases (TDR) supported the writing and review process. The guide was revised, translated into Spanish, and pre-tested at two regional workshops funded by the US Centers for Disease Control and Prevention (CDC). The first workshop was held in the WHO Western Pacific Region, in partnership with the WHO South-East Asia Region, and the second was held in the WHO Region of the Americas (in partnership with the Pan American Health Organization (PAHO) and the Environmental Health Project of the United States Agency for International Development (USAID). The workshops, held in the first semester of 2003, provided additional feedback and enabled final modifications to be made to the document.

**Planning social mobilization and communication for behavioural impact: A step-by-step guide**

For the first time in relation to dengue, this guide offers a comprehensive and innovative managerial insight to planning social mobilization and communication for behavioural impact. The guide is intended for programme managers and individuals, NGOs, and other agencies with interests and/or expertise in integrating biological, chemical, environmental, and communication
interventions to prevent and control DF/DHF. Some countries have produced or are currently producing national guidelines on community participation, behaviour change communication, and social mobilization for dengue prevention and control. It was felt that this WHO guide would contribute to the development and support of these local initiatives by demonstrating a breadth of international experiences.

A key aspect of the guide is its focus on measurable behavioural changes resulting from well-planned social mobilization and communication actions. The guide uses the “Communication for Behavioural Impact” (COMBI) model for planning, although examples of other effective planning models are described in Tool 4 of the guide’s “Toolbox.” The planning process is divided into a 15 step-by-step process (Box 3) illustrated with real-life examples taken from 12 detailed case studies of current dengue programmes from around the world[11].

The guide itself is divided into 16 sections. The first 15 sections explain specific tasks and issues associated with each COMBI Planning step. The authors offer suggestions, examples, and lessons learnt to help the reader successfully complete each step. Three essential managerial tasks will be accomplished if these 15 steps are successfully followed. First, clear behavioural objectives will be established. Second, the strategic roles of a variety of social mobilization and communication disciplines - for example, public relations, advocacy, administrative mobilization, community mobilization, advertising, interpersonal communication, and point-of-service promotion - in achieving and sustaining these objectives will be determined. And third, these disciplines will be combined in a comprehensive plan that provides clarity, consistency, and maximum behavioural impact to social mobilization and communication efforts. Section 16 offers some final words of advice from several programme teams who have advanced the field of dengue prevention and control in recent years.

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<th>Box 3. Fifteen Steps of COMBI Planning</th>
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<td>1. Assembling a multidisciplinary planning team;</td>
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<td>2. Stating preliminary behavioural objectives;</td>
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<td>3. Planning and conduct formative research;</td>
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<td>4. Inviting feedback on formative research;</td>
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<td>5. Analysing, prioritizing, and finalizing behavioural objectives;</td>
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<td>6. Segmenting target groups;</td>
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<td>7. Developing the strategy;</td>
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<td>8. Pre-testing behaviours, messages, and materials;</td>
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<td>9. Establishing a monitoring system;</td>
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<td>10. Strengthening staff skills;</td>
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<td>11. Setting up a system to manage and share information;</td>
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<td>12. Structuring the programme;</td>
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<td>13. Writing a strategic implementation plan;</td>
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<td>14. Determining the budget, and</td>
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<td>15. Conducting a pilot test and revising the strategic implementation plan.</td>
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Five tools are also included in the guide: Tool 1 is a comprehensive annotated bibliography of journal and book references and useful web sites; Tool 2 describes key stages in the conduct of formative research.
on DF/DHF; Tool 3 is a “strengths and weaknesses” checklist for use during formative research on the status of dengue programmes; Tool 4 offers six different approaches to setting behavioural objectives; and Tool 5 provides 10 ideas for achieving the optimum budget for social mobilization and communication.

**Dengue-COMBI in action**

An additional result of the regional workshops was the development of detailed social mobilization and communication plans (COMBI plans) by multidisciplinary teams from each country participating in the workshops. Teams included senior level ministry of health officials from the departments of epidemiology, vector control/national dengue control programme, health education/communications, and entomology. Included in the CDC workshop funding was a US$ 50,000 start-up grant for one of the four participant countries in the Americas (Costa Rica, Dominican Republic, Guatemala, and Nicaragua).

Countries were informed that a competitive process would be held, with the COMBI plans scored by a group of experts knowledgeable of the COMBI process. In addition to the COMBI plan, each Ministry of Health was required to submit a letter of support indicating that the ministry would support implementation of the project through in-kind expenses as described in the plan. Of the four Central American countries, two have received funding to date: Guatemala - recipient of the US$ 50,000 CDC start-up funds (funding is almost 100% of that requested, US$ 57,721) and Nicaragua - recipient of a grant from the PAHO Country Office (funding is 100% of that requested, US$ 15,475). In the WHO Western Pacific and South-East Asia Regions (Cambodia, Indonesia, Lao People’s Democratic Republic and Thailand), funding was secured from USAID for the Laos dengue-COMBI plan.

The COMBI guide has received much interest and positive feedback from dengue experts, particularly from dengue programme staff participating in the workshops. As a result of this interest, PAHO has secured funds to conduct a second COMBI workshop for the remaining countries in Central America (Belize, El Salvador, Honduras and Panama), scheduled for the end of October 2003. The guide has also been used as part of the social science track of the Eighth International Dengue Prevention and Control course sponsored by PAHO and the Pedro Kouri Institute in Havana, Cuba, in August 2003. A dengue-COMBI training programme was recently conducted in Myanmar (supported by SEARO) and in September 2003 the Ministry of Health, Malaysia, sponsored another COMBI training programme that included national and provincial dengue programme staff. PAHO has adopted COMBI as the planning process for a new model of technical assistance for dengue (known as the Grupo Técnico, or GT-Dengue). Funds were recently received from the Canadian International Development Agency (CIDA) to pilot the Grupo Técnico concept. CDC has also provided additional funds for two further training workshops to be held in 2004 for 4 countries from the Andean region and 4 countries from the English-speaking Caribbean region, including support for one project in each region.
Evaluations of the dengue-COMBI plans in Lao PDR, Nicaragua, Guatemala, and two plans developed at the 2004 workshops are expected to be conducted between 2004-2005. These evaluations will strengthen our collective insights into how to sustain behavioural impact and build programme capacity as well as strengthen ongoing advocacy and fund-raising efforts in the prevention and control of DF/DHF. A special symposium on behavioural research and behaviour change interventions is to be included at the Second International Conference on DF/DHF in Havana, Cuba, 31 May to 3 June 2004. The guide will be officially launched at this symposium.

References


Community participation is advocated as essential for attaining effective dengue prevention, but knowledge of how to foster this is limited. In Santiago de Cuba, multiple small task forces were created at the neighbourhood level that included all stakeholders in the control of Aedes aegypti. Towards active community participation in dengue vector control: results from action research in Santiago de Cuba, Cuba. Dengue fever is a viral infection commonly found in the tropical and sub-tropical regions that is carried and spread by the Aedes aegypti mosquito. Awareness is the first step in prevention. People should make sure they are aware of whether there is a risk of dengue infection and be ready to protect themselves if they are travelling to a region where infection is common. Vector control. Related Stories. Sterilizing mosquitoes may be the answer to curb Zika, Dengue, Chikungunya, WHO reports. Mutations in specific protein make dengue virus resistant to vaccines and therapeutics. New compound may enhance dengue vaccine efficacy by simulating amino acid deficiency.