Community Participation in Environmental Management for Dengue Vector Control: Experiences from the English-speaking Caribbean

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Abstract

This paper describes an initiative on community mobilization and organizational change implemented through the Caribbean Cooperation in Health (CCH)/Government of Italy Integrated Vector Control Project. The project involved 15 island countries and territories of the English-speaking Caribbean between 1992 and 1997. One of the most significant changes arising from this initiative was the shift in many national programmes from a top-down approach to environmental health management towards community dialogue, negotiation and partnership to resolve vector control and sanitation problems.

Keywords: DF/DHF, Aedes aegypti, environmental health management, community, partnership, Caribbean.

Geographical setting and background

The 15 English-speaking island countries and territories that were engaged in the project are part of the wider Caribbean Community, CARICOM. They have a tropical to sub-tropical climate with a wet season between May and November. Their combined population is approximately 5.1 million. Whereas the majority of the population in most of the islands is of African descent, East Indians constitute the largest ethnic group in Trinidad and Tobago.

Dengue in the islands is characterized by sporadic outbreaks or epidemics, usually occurring in the latter half of the year. Increasing numbers of dengue haemorrhagic fever cases have been reported in the last 10-15 years. Aedes aegypti is the only incriminated vector of dengue in the islands. Until recently, dengue prevention and control in these countries was mostly organized through highly centralized management structures established by national governments during the period of the hemispheric eradication campaign (1950s to mid-1980s). Larviciding was the
main vector control intervention, with temephos 1% sand granules being the insecticide and formulation of choice since the 1960s. Coverage was often incomplete, infrequent and geographically limited. A few programmes applied residual adulticides and in approximately half of the islands space spraying was carried out using vehicle-mounted or hand-held machines, typically in response to public complaints of mosquito nuisance, reports of dengue cases, increased risk of transmission or in areas with high vector densities[1]. In many of the islands, water was stored by householders because of an unreliable public supply system or, in some cases, no public supply at all; in over half of them, larvivorous fish were reportedly used for larval control in larger domestic water storage containers. There were some source reduction efforts including the overturning of small containers by field workers during house inspections, and the organisation of communities to carry out ‘clean-up’ campaigns. Print and mass media activities and the distribution of posters, pamphlets and other educational materials typically supported the latter. With some notable exceptions, the majority of field workers were semi-skilled and employed on a weekly or monthly basis.

By the 1980s it was evident that these approaches were not adequately suppressing vector densities nor were they improving the epidemiological situation. Moreover, the earlier and significant gains that had been achieved (e.g., elimination of the vector and no dengue transmission in several Caribbean island countries and most Central and South American countries) were rapidly eroded whenever programmes suffered funding cutbacks. Decentralized, community-based approaches emphasizing environmental management were considered the only way of achieving sustainable gains, particularly in the context of health sector reform and stagnating health budgets.

**Planning innovation for dengue prevention and control**

In mid-1992 funds were mobilized from the Government of Italy to implement the ‘Caribbean Cooperation in Health (CCH)/Government of Italy Integrated Vector Control Project’. The main objective of the project was to reduce densities of *Ae. aegypti* through community-based integrated vector control measures with an emphasis on larval source reduction in project areas of 15 islands of the English-speaking Caribbean. A broad-based environmental sanitation strategy was developed, based in part on the results of a Knowledge, Attitude and Practice (KAP) study conducted in Trinidad and Tobago[2].

The project was overseen by a Project Advisory Committee which comprised of key Ministry of Health (MOH) officials and relevant experts from several participating countries. The Pan American Health Organization (PAHO) provided technical support. Each country appointed a project liaison officer from the MOH, established a national inter-sectoral committee, and undertook a KAP survey and an entomological baseline survey as pre-requisites for national project development and release of funding. Country projects typically spanned a period of 3-4 years from baseline surveys to final evaluation. The national inter-sectoral committees were chaired by a MOH officer and typically included representation from the Ministries of Education and Environment, and within the health ministry from Environmental Health, Health Education and Vector Control.
departments, as well as nongovernmental organizations and other civic groups.

Implementing the new project

A summary of the results of each baseline KAP and larval survey were discussed with the project communities at initial community meetings. Through a process of negotiation, and in the context of environmental sanitation and mosquito/vector/pest control, priorities were identified addressing the concerns of both the community and the institutions responsible for project implementation. Key behaviours to be addressed were specific to each pilot project. During these initial community consultations, other likely resources to be mobilized were also identified.

Children as potential change agents were a major focus of programme activities. In five countries an environmental health module on Reducing Pests, Insects and Vectors was developed with the intention of integrating it into the existing Health and Family Life Education curriculum. The environmental health module included short educational videos, lesson plans and activities. The module was pre-tested and revised before wider dissemination. The behaviours to be addressed by teachers were school-specific, ranging from litter control and garbage separation/recycling/composting, to larval source reduction, vegetable gardening utilizing the compost, and horticultural enhancement of the school environment.

Training was a major component of the project, with emphasis given to capacity building within ministries of health. Based on appraisals of national programme activities, it was readily apparent that there was need to improve not only technical skills but also the skills of negotiation and community engagement. To address these needs, local, national and international courses, seminars and workshops were conducted.

A media and communications specialist was recruited to support project management. Messages and materials were developed for use at many levels, ranging from person-to-person communication between field workers and householders, to communication via radio, TV and print media. Public meetings within pilot communities were also a critical social mobilization component of most national projects.

Behavioural messages typically focused on source reduction strategies such as disposal or storage of unwanted consumer items that could provide mosquito larval habitats. Depending on local circumstances, the use of covers that physically excluded adult mosquitoes, the introduction of local larvivorous fish or the regular emptying and cleaning of water containers were all encouraged.

Direct demonstration of the environmental sources of nuisance mosquitoes, notably Culex quinquefasciatus, was found to be a powerful motivating factor for householders to repair and seal septic tanks or, in one project, to apply expanded polystyrene beads to the water surface of ‘wet’ pit latrines to control the mosquitoes[3] and to engage in other project activities.

Monitoring and evaluating the new approach

Evaluation was based primarily on changes in KAP and entomological indices in the pilot project communities and on the extent to which different agencies and organizations including schools, became
involved. Periodic visits were made to national programmes and selected project communities by external technical advisors and national project managers were obliged to provide regular progress reports.

At the community level, feedback was channeled through community meetings organized by the local environmental health officer. National journalists and broadcasting stations were encouraged to provide feedback to the wider community on project progress. The national inter-sectoral committees met regularly for project updates and to make key management decisions. Overall programme feedback mechanisms were established at the international level to ensure regular information flow to and from the Project Advisory Committee and the national authorities.

Lessons learned

The most significant change resulting from this project was the way national vector control teams approached and worked together with communities and other key agencies to resolve problems of mutual concern. There was a shift away from an exclusively ‘top-down’ approach to one of dialogue, negotiation and partnership to resolve environmental sanitation and vector control problems. One consequence of this change was that some national dengue programmes broadened their responsibility beyond *Ae. aegypti* control, and adopted a more flexible, problem-based approach to programme management.

Although KAPs were favourably altered and vector larval indices were reduced in most project communities, the magnitude of these changes was modest and unlikely to have been of major epidemiological significance. Given the complexities and demands of managing a multi-component, multi-country project, a strengthening of overall project management would have facilitated improved delivery of the technical support.

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References

