

Achieving sustainability of community-based dengue control in Santiago de Cuba

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Abstract

Achieving sustainability is one of the major current challenges in disease control programmes. In 2001–2002, a community-based dengue control intervention was developed in three health zones of Santiago de Cuba. New structures (heterogeneous community working groups and provincial/municipal coordination groups inserted in the vertical programme) were formed and constituted a key element to achieve social mobilization. In three control zones, routine programme activities were intensified. We evaluated the sustainability of the intervention strategy over a period of 2 years after the withdrawal of external support.

Data on maintenance of effects, level of institutionalization and continuity of activities through capacity building were collected via documental review, direct observation, questionnaires, key informant and group interviews and routine entomological surveys.

The intervention effects, evaluated through larval indices and behavioural change indicators, were maintained during the 2 years of follow-up. In the intervention area, 87.5% of the water storage containers remained well covered in 2004 and 90.5% of the families continued to correctly use a larvicide, against 21.5% and 63.5%, respectively in the control area. The house indices further declined from 0.35% in 2002 to 0.17% in 2004 in the intervention area, while in the control area they increased from 0.52% to 2.25%. Institutionalization of the intervention, assessed in terms of degrees of intensiveness (passage, routine, niche saturation), was reaching saturation by the end of the study. Key elements of the intervention had lost their separate identity and became part of the control programme's regular activities. The host organization adapted its structures and procedures accordingly. Continuous capacity building in the community led to participatory planning, implementation and evaluation of the *Aedes* control activities. It is concluded that, in contrast to intensified routine control activities, a community-based intervention approach promises to be sustainable.

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Introduction

Dengue is a rapidly expanding public health problem. Worldwide, epidemics have become more frequent and involved larger populations (Gubler & Meltzer, 1999; Guzman et al., 1990; Harris et al., 2000; Kouri et al., 1998). In the endemic areas in Asia and in the Americas, the incidence of the severe and fatal forms, dengue hemorrhagic fever (DHF) and dengue shock syndrome, has increased dramatically over the last decades (Anonymous, 2000; Kay & Vu, 2005). The only currently available option to prevent or reduce dengue infection is the control of *Aedes aegypti*, the main vector of the virus. Dengue's global re-emergence reflects the difficulty of maintaining effective vertically organized control programmes in a rapidly changing socio-economic environment and highlights the urgent need to develop alternative, sustainable and integrated approaches that should rely on community participation as a key element (Rosenbaum et al., 1995; Winch, Kendall, & Gubler, 1992). Despite the growing consensus regarding the need for community-based *Ae. aegypti* control strategies, community participation is often limited to collaboration in the destruction of peridomestic larval habitats and in periodic clean-up campaigns, not infrequently in response to coercive measures (Gubler, 1989). This 'passive' participation could explain the short-lived effectiveness of such strategies, which are often not maintained once external support is withdrawn (Gubler & Clark, 1996; Lloyd, Winch, Ortega-Canto, & Kendall, 1992).

Many health projects in Latin America have promoted participation to improve populations' health (Winch et al., 1992), but few large-scale participatory programmes have been studied and indicators to evaluate their long-term effectiveness and sustainability, remain unclear. Indeed, systematic research about the long-term maintenance of health programmes is at an early stage and there is, to date, no substantial body of literature. The phenomenon of programme continuation has been referred to by several terms such as programme "maintenance", "sustainability", "institutionalization", "incorporation", "integration", "routinization", local or community "ownership" and "capacity building" (Shediac-Rizkallah & Bone, 1998). The most frequently adopted—albeit controversial—definition is maintenance of activities and results after external financing and support has been withdrawn (US Agency for International

Development, 1988). Various authors have proposed models for the exploration and evaluation of sustainability (Bossert, 1990; Bracht, 1999; Olsen, 1998; Shediac-Rizkallah & Bone, 1998). According to Scheirer (2005), the most inclusive framework is offered by Shediac-Rizkallah and Bone (1998). These authors suggest that indicators to measure sustainability fall into three distinct categories: maintenance of health benefits achieved through the continuation of an initial programme, the maintenance of programme activities within a host organization (institutionalization), and the maintenance of capacity building of the recipient community (Shediac-Rizkallah & Bone, 1998).

Between 2001 and 2002, a pilot project was developed in Santiago de Cuba with the objective to achieve active participatory *Ae. aegypti* control. At the end of the project, the community had become actively involved and changes in human behaviour were documented alongside a decrease in entomological indices (Toledo et al., 2006). Up to 2004, we evaluated the sustainability of the strategies during a period of 2 years after withdrawal of external support to the project.

Material and methods

Context

The Cuban *Ae. aegypti* Control Programme has been hailed as one of the few success stories (Arias, 2002; Gubler & Clark, 1996). It receives important support from the government and is aided by public mobilization in times of epidemics (Gubler & Clark, 1996; Valdes et al., 1999). For 16 years (from 1981 to 1997) there were no reported autochthonous cases of dengue in Cuba. In 1997, the municipality of Santiago de Cuba (475 580 inhabitants), located in Western Cuba, was the first one presenting an epidemic after the *Ae. aegypti* eradication (Valdes et al., 1999). Subsequent other small outbreaks were detected in Havana City in 2000–2001 (Pelaez et al., 2004), which highlighted the need to readjust actions and prevent the disease from spreading. A pilot project (2001–2002) for participatory dengue control was therefore elaborated and implemented, as described in detail elsewhere (Toledo-Romani, Baly, Ceballos, Boelaert, & Van der Stuyft, 2006). We will limit ourselves here to provide a short description of the set-up. The community-based strategy was implemented in three health zones, purposively selected from the districts with major

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