



**ENVIRONMENTAL HEALTH PROJECT**

# **ACTIVITY REPORT**

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**Social Mobilization as an Approach to  
Prevention and Control of Dengue in Guatemala**

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by

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## **ABOUT THE AUTHORS**

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A number of private sector institutions responded to specific requests: Fundazúcar, Ingenio Pantaleón, Cengicaña, Cervecería del Sur, Pepsi-Cola, Coca-Cola, Almacenes Gala, Despensa Familiar, Restaurante Sarita, and Plaza Palmeras. The following local radio stations collaborated by broadcasting without charge the messages developed under the project: Radio Tropicana, Ritmo, La Cañonera, Católica, La Bronca, Stereo Impacto, Sur, Escuintla, Campesina, and FM 89. In addition, closed circuit and mobile advertising operations in Escuintla, Nueva Concepción, Tiquisate, Santa Lucía, La Gomera, and Puerto de San José broadcast, without charge to the project or the ministry, the radio spots, jingles, and mini-series dealing with dengue prevention. The local press collaborated by publishing reports on project achievements and activities. The support received from the following newspapers was significant: El Enfoque, El Centinela, El Bachiller, Semanario Luciano, Costa Grande, Sendero and El Cambio. Local TV stations broadcast without charge the commercials and documentary prepared by the project. Channels 14 and 18 participated in Escuintla, while Channel 5 participated in Santa Lucía Cotzumalguapa.

Achievement of the project objective would not have been possible without the efforts and enthusiasm of the inhabitants of Escuintla. It was they who, with advisory assistance from MOH and INCAP personnel, together with project funds, made a concerted effort to mobilize the general public and successfully increase awareness, by making use of project resources to promote the implementation by the public of activities aimed at controlling and preventing dengue.





## ACRONYMS

DHF dengue hemorrhagic fever

FC *facilitadores comunitarios* (community facilitators)

FI *facilitadores institucionales* (institutional facilitators)

IGSS *Instituto Guatemalteco de Seguridad Social* (Guatemalan Social Security Institute)

INCAP *Instituto de Nutricion de Centro America y Panama/OPS* (Nutritional Institute of Central America and Panama/PAHO)

JASE *Jefatura de Area de Salud de Escuintla* (Escuintla Health Area Headquarters)

MOH Ministry of Public Health

PAHO Pan American Health Organization

SIAS *Sistema Integrado de Atención en Salud* (Integrated Health Care System of the Ministry of Public Health)



## EXECUTIVE SUMMARY

In 1996, along with a large outbreak of classic dengue (a flu-like, self-limiting viral disease), 18 cases of dengue hemorrhagic fever or DHF (a serious, often fatal disease) were reported in the department of Escuintla, Guatemala, located along the southern coast of the country. Health authorities expected a large outbreak of dengue and DHF in 1997 unless intensive preventive measures were adopted. Under the coordination of the Ministry of Public Health (MOH), a public information and vector control plan, predicated on community participation and social mobilization, was developed to reduce the number of breeding sites of the dengue vector. The use of chemical products (pesticides) as the control measure was specifically excluded. The project received substantial support from INCAP and the USAID Mission in Guatemala, technical assistance from USAID/Washington's Environmental Health Project (EHP), and the active participation of the Escuintla health sector.

For the first time in the history of Guatemala (and Latin America), the MOH successfully implemented a program to control *Aedes aegypti* based on community participation. As a result of this intervention, no cases of DHF were recorded in the department of Escuintla in 1997. In addition, although there was substantial improvement in the case-reporting system, the total number of cases of classic dengue recorded between weeks 28 and 33 of the 1997 epidemiological year (the weeks in which the greatest number of cases were recorded) was lower than the same period in 1996.

The project made use of a monitoring system that was linked to the community surveillance system and based on a very simple pictorial instrument. It included detection of febrile illness, noted respondents' exposure to preventive messages, and identified breeding sites at the household level. Results were consolidated by community volunteers who submitted a summary sheet to an institutional facilitator, who then reported the results to the epidemiologist at the Escuintla Health Area Headquarters. These community volunteers not only played a role as evaluators but also provided feedback to households regarding proper practices for eliminating breeding sites.

The project began with a baseline measure of knowledge and practices associated with the presence of breeding sites in the home. The baseline analyses showed that 97% of the population had some knowledge of the symptoms of dengue, but that only 0.4% had knowledge of breeding sites and ways to prevent the disease. The educational communication intervention was based on the findings of this survey, which was conducted among Escuintla housewives to determine the feasibility of the proposed interventions. This baseline data facilitated outreach work and ensured active community participation in the selection of the interventions to be implemented. It also made it possible to assess more objectively the acceptability of the proposed intervention.

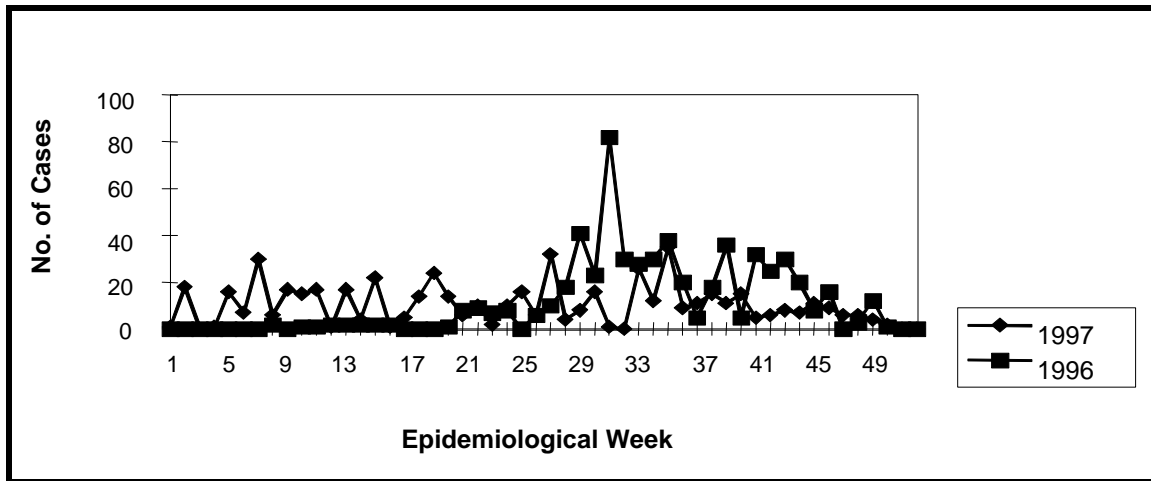
### Achievements

**The principal project achievement was that in 1997, no outbreaks of DHF were reported in the department of Escuintla.**

As mentioned above, the total number of cases of classic dengue recorded in 1997 was less than the number reported in 1996. This decrease was particularly notable when comparing weeks 28 and 33, the period in 1996 that witnessed the outbreak of dengue that sparked the concern of the MOH. The overall decrease in 1997 is notable since, between 1996 and 1997, there was significant improvement in the surveillance and recording of dengue cases in Escuintla. In addition, a monitoring system for the reporting of cases to the Escuintla Health Area Headquarters was implemented at that time, and cases of dengue treated in the Escuintla Social Security Institute were included in MOH statistics as well. Thus, even with overall improvements in case reporting, the number of cases of dengue decreased (see graph, next page).



## Cases of Dengue in the Department of Escuintla



The findings of the monitoring survey were that reductions in the Breteau,\* household,\*\* and container indexes were directly proportionate to household members' exposure to project interventions. The Breteau index dropped from 21 to 2.2, while the container and household indexes fell from 4.5 to less than one and from 15 down to 14, respectively. The results of the final evaluation indicate that the percentage of infested households was similar during the baseline and final surveys. However, the degree of infestation diminished significantly as shown by the Breteau and breeding site indices in the final evaluation. This indicates that the severity of the infestation by *Aedes aegypti* diminished significantly after the educational and communication interventions of the project.

The project created a community surveillance system to prevent and control dengue. The system was tied to the health sector and was able to continue on a self-sustaining basis after the project financing had ended. The perseverance and highly responsible work of the groups created through the project deserve recognition and continued encouragement, in order to support the achievements to date.

Project personnel also implemented a monitoring system based on a simple pictorial instrument, which was filled out by volunteers who were appropriately trained and motivated to take decisions at the local level. The monitoring system also provided an opportunity for volunteers to give feedback to households. A quality control system was set up for project supervisors to oversee the monitoring process.

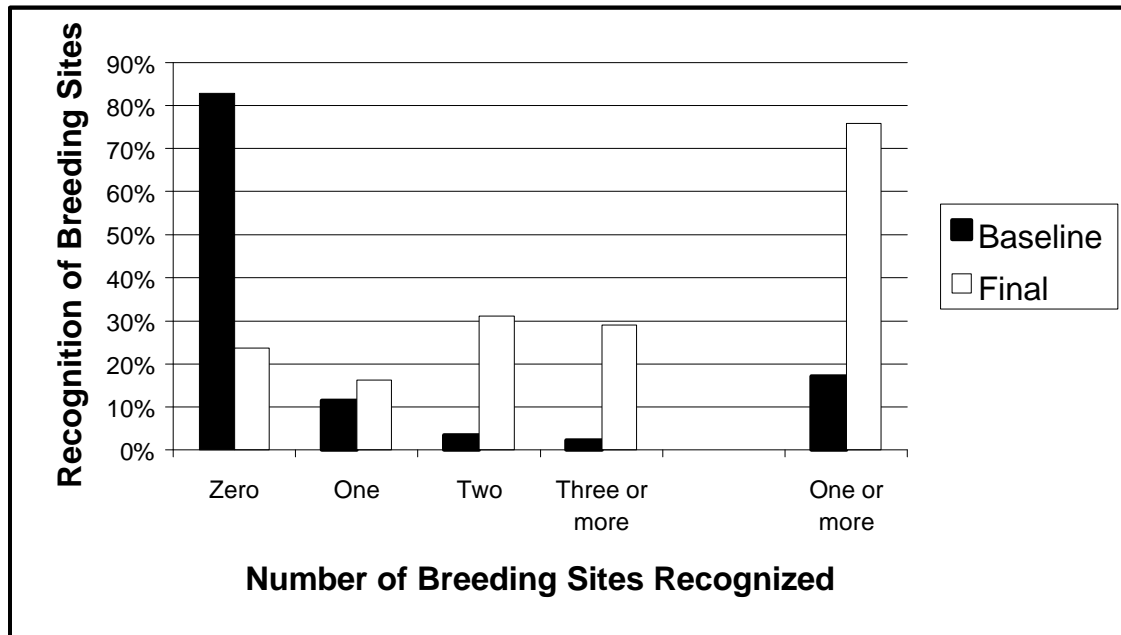
A baseline of knowledge of the disease and breeding sites was useful in reaching the population and in obtaining an active community participation in the selection of interventions to be implemented.

Public knowledge of the dengue vector's breeding sites and water cycle improved significantly: whereas prior to the project only 2% of those surveyed could name three or more breeding sites for *Aedes aegypti*, in the final survey about 30% could correctly name three or more such sites, and 76% could identify at least one breeding site correctly (see graph, next page).

\* The Breteau index is the number of breeding sites found per inspected household.

\*\* The housing index reflects the number of inspected households that have at least one breeding site.

## Knowledge of Breeding Sites Before and After the Intervention



### Lessons Learned

- # It was critically important to the success of the project to determine the viewpoint of community residents at the start and establish a frame of reference for all participants, as well as a common terminology that would facilitate acceptance of project interventions.
- # Decisive factors for success, in both qualitative (knowledge, practices) and quantitative terms (levels of larval infestations, primary breeding sites), included the baseline research efforts and the feasibility of project interventions themselves. For example, the social communications messages, the surveillance and monitoring systems, and the pictorial monitoring instrument all proved to be manageable mechanisms to use.
- # A participative local system of surveillance and monitoring is important in order to ensure optimum use of health sector resources while enabling authorities to supervise their personnel objectively.



# 1 INTRODUCTION

Dengue occurs in humans when the female *Aedes aegypti* mosquito first bites a sick person and then a healthy person, thus transmitting the virus to the latter individual and making him or her ill. This disease can be controlled by destroying the breeding sites of the vector mosquito, which is eminently urban, domestic, and diurnal and requires clean water in which to reproduce.

Dengue can be manifested as either classic dengue or dengue hemorrhagic fever (DHF). Classic dengue is a self-limiting viral disease with symptoms quite similar to those of a bad case of flu and to which little importance is generally attributed. DHF, on the other hand, is a serious syndrome requiring hospitalization in an intensive care unit and exhibiting a very high mortality rate.

Since the 1960s, the dengue vector, *Aedes aegypti*, has reappeared in the countries of Central America. In recent decades, several outbreaks of dengue and DHF have impacted negatively on both the population and the economy as a result of the circulation of four separate serotypes of the virus. There are various reasons for its reappearance, chiefly the large population increase and increased mobility and exchange of goods among countries. We should remember that *Aedes* was never eliminated entirely from the United States and that there still exist large regions of Asia and Latin America where the virus is present. At the same time, the availability of resources to maintain large teams of technicians and warehouses full of pesticides for controlling vectors has decreased substantially, for both economic and policy-related reasons. In the face of such conditions, outbreaks of dengue are unavoidable.

Between June 1996 and January 1997, 18 cases of DHF were reported in the department of Escuintla, located on the southern coast of Guatemala. In 1996, household,<sup>1</sup> Breteau,<sup>2</sup> and container<sup>3</sup> indexes of larval infestation in some municipalities rose to alarming levels, with the household index reaching an average of 48%. Indexes were even higher in Santa Lucía Cotzumalguapa, Escuintla, La Gomera, La Democracia, and Puerto de San José, which together account for 60% of the total population of the department. Accordingly, these five municipalities were top priority for the implementation of a community-based system to prevent and control dengue in Escuintla.

The 18 cases of DHF represented the tip of a much larger outbreak of classic dengue. In September 1996, the Ministry of Public Health (MOH), Instituto de Nutricion de Centro America y Panama (INCAP), and U.S. Agency for International Development (USAID) proposed an action plan for the prevention and control of dengue, with emphasis on social mobilization. The number of cases reported increased the urgency to implement this plan, which was approved by the MOH and USAID in November 1996.

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<sup>1</sup> Household index =  $\frac{\text{Households infested}}{\text{Households inspected}} \times 100$

<sup>2</sup> Breteau index =  $\frac{\text{Number of breeding sites}}{\text{Households inspected}} \times 100$  where breeding sites=positive containers

<sup>3</sup> Container index =  $\frac{\text{Number of breeding sites}}{\text{Number of containers inspected}} \times 100$



The proposed plan was innovative in a number of ways:

- # It applied the PAHO strategy for breeding site control, which promotes community participation instead of the use of pesticides.
- # It applied a health communication strategy based on qualitative and quantitative research conducted on the target audience, gathering information on knowledge and behavior with regard to dengue; the dengue vector; and the use, storage, and disposal of water.
- # It called for close coordination between the Ministry of Public Health, the Guatemalan Social Security Institute (IGSS), and the Escuintla Health Sector.
- # It used a system of monitoring that made it possible to take immediate action at the local level (with follow-up at the household level) during the project implementation period.
- # It conducted an evaluation of project exposure and effect.
- # It made possible the initial adoption of the basic strategy of the Integrated Health Care System (known by its Spanish acronym, SIAS) of the Guatemalan Ministry of Public Health, aimed at organizing community response to health problems through social mobilization.

## **1.1 Objective**

The general objective of the action plan was to prevent a new outbreak of dengue-DHF through community participation and social mobilization aimed at achieving a sustainable response, with no dependence on inputs having high costs in economic and ecological terms (pesticides) and with priority assigned to the five most affected municipalities of the department of Escuintla: Santa Lucía Cotzumalguapa, Escuintla, La Gomera, La Democracia, and Puerto de San José. The objective was later expanded to include the remaining municipalities, owing to the critical nature of the problem.

## **1.2 Strategy**

Based on a review of the experience of other projects, six elements essential to achievement of the objective were identified:

1. Control of breeding sites: recognition, detection, and control by the general population
2. Intersectoral campaign (IGSS-MOH-public and private sectors)
3. Focus on changes in specific behaviors designed to prevent breeding sites
4. Community participation and social mobilization
5. Systematic consultation with the community, including:
  - # baseline (rapid survey)
  - # feasibility of interventions
  - # testing of materials
  - # monitoring
  - # final evaluation
6. Sustainable system of community surveillance.

# 2 PROJECT ACTIVITIES

## 2.1 Organization and Baseline Investigation

During the month of December 1996, the project management committee was organized. It consisted of representatives from the central level of the MOH, Escuintla Health Area Headquarters (Jefatura de Area de Salud de Escuintla, or JASE), the vectors department, and INCAP. As an initial task, the committee interviewed several candidates, after which it proceeded to select the social communications expert and the principal technical advisor. Activities commenced on January 6, 1997.

The baseline study was carried out in January and February and included a rapid survey containing both qualitative and quantitative elements with respect to knowledge of dengue, as well as of its modes of transmission and methods of prevention. In addition, the baseline included a larval survey to determine degrees of infestation with *Aedes aegypti* and to identify the principal breeding sites in the five priority municipalities.

### 2.1.1 Survey of Knowledge and Practices

The baseline survey was administered in Santa Lucía Cotzumalguapa in a total of 380 households. Based on the assumption that the five municipalities are similar in terms of population and knowledge, as well as for reasons of cost and availability of time, only one municipality was visited. Santa Lucía Cotzumalguapa was selected because it reported the largest number of cases of DHF in 1996. The survey, based on a random sampling, explored the following areas:

- # Socioeconomic characteristics
- # Knowledge of dengue and its modes of transmission
- # Knowledge of the dengue vector
- # Knowledge of ways to prevent dengue
- # Community organization, communications media most used, and community information sources
- # Observation of household water sources
- # Observation of actual and potential breeding sites

The results revealed that 97% of the population knew the clinical symptoms of dengue and were aware that the dengue vector is a mosquito. However, only 0.4% of the sample interviewed knew the mosquito's life cycle and breeding sites and their relation to preventive measures. In addition, only one family participated in a health committee, and only 14% of those interviewed had heard of the local-level health committees. The survey revealed that 80% of the respondents listened to the radio and watched national television channels every day. In addition, 26% received information from a neighbor. Table 1 shows the results of the dengue prevention survey conducted in Santa Lucía Cotzumalguapa.

**Table 1**  
**Baseline Survey: Knowledge of Prevention of Dengue**

What can be done to avoid getting dengue?	Response
Nothing	4.0%
Kill the mosquito	12.0%
Destroy breeding sites	26.4%
Use chemicals	2.9%
Stay away from mosquitos	17.4%
Other	46.9%

### 2.1.2 Larval Survey

The larval survey was conducted by means of a random, stratified cluster sampling of 1,200 households located in the five priority municipalities. The survey team was trained to look for and identify breeding sites, recognize the *Aedes aegypti* larvae, take a sample of positive breeding sites, and proceed to record the appropriate information.

The larval survey showed that the principal breeding sites of the *Aedes aegypti* mosquito in Escuintla were useful breeding sites such as steel and plastic drums, above-ground tanks, washtubs, bottles for storing water, and earthen jars, and that the potential breeding sites included jars, bottles and automobile tires. The average number of breeding sites per household is summarized in Table 2; it is important to note that, for each disposable breeding site,<sup>4</sup> more than five useful breeding sites were identified,<sup>5</sup> a finding that probably reflects the inefficiency of the “junk removal” campaigns conducted during the preceding year. The most commonly observed noninfested containers (potential breeding sites) are listed in Graph 1.

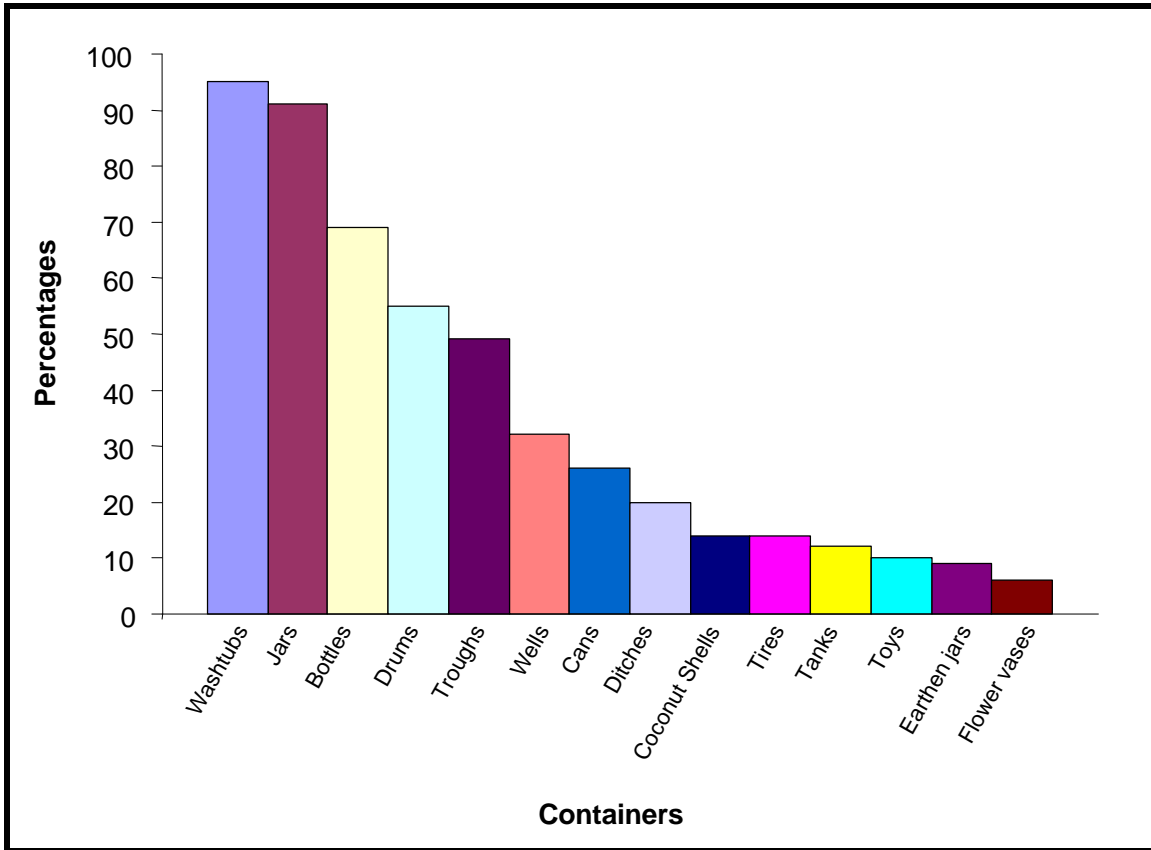
It is important to note that this baseline survey was conducted during the dry season, when the presence of the dengue vector is significantly less pronounced.

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<sup>4</sup> “Disposable breeding sites” are those that can be destroyed because they have no utility for the owner.

<sup>5</sup> “Useful breeding sites” are those created in washtubs, drums for storing water, water storage tanks or any other container that is necessary for the families and therefore cannot be destroyed but rather must be controlled.

**Graph 1**  
**Percent of Households with Potential Breeding Sites for *Aedes aegypti* (n - 1,200)**



**Table 2**  
**Average Number of Breeding Sites Found per Household, in Baseline Survey**

Type of breeding site	Avg. No.
<i>Useful</i> (not disposable) breeding sites: drums, washtubs, tanks, bottles, earthen jars	11.74
<i>Disposable</i> breeding sites: tires, cans, toys, flower vases, coconut shells	2.74

## 2.2 Design and Timing of Interventions

Based on the results of these two surveys, gaps in knowledge were identified and those domestic behaviors that might serve to control mosquito breeding sites were identified: scrubbing washtubs and drums once a

week, covering drums and above-ground tanks, turning empty bottles and containers upside down, and keeping the yard clean. A first draft of the communication strategy was prepared and potential interventions were defined for subsequent validation of their acceptance by the target audience.

The formative research effort was conducted in two phases:

# **First phase.** Work was carried out with 69 housewives from the urban areas of the two municipalities experiencing the greatest rate of larval infestation: Puerto de San José and the neighborhoods of Colonia Popular and Colonia Madrid in the departmental capital. To gather data, semistructured interviews and two modes of direct observation were used: instantaneous observation of the status of potential breeding sites and directed observations in which the women surveyed were asked to wash their water containers.

Biological control practices (using fish, crustaceans, reptiles) already being followed by the target audience were observed. The research team confirmed the interest of the target audience in participating in three interventions and the feasibility of the implementation of those interventions: visits to homes by volunteer personnel (duly identified with difficult-to-reproduce name badges) for the purpose of training the general public in control measures, participating in a clean-up campaign carried out at the municipal level, and following recommendations for proper washing of water storage containers.

# **Second phase.** The purpose of this research activity was to confirm the viability of the recommendations formulated in the preceding phase under conditions normally found in the home, in order to fine-tune the content of the intervention dealing with dengue prevention education. Housewives were asked to test three recommendations for a period of ten days: vigorously washing (scrubbing) the washtub and drum and covering the drum with the cloth provided to them. At the conclusion of the ten-day period, they were interviewed to ascertain their opinion with regard to the feasibility of incorporating these behaviors into their daily routine. An assessment was made as to the acceptance and adoption of these behaviors as well as any obstacles to their adoption and motivation, together with the corresponding costs and benefits. The tests were carried out in 62 households located in the neighborhoods of Santa Marta in Escuintla and El Peñate, San José, and Colonia Campiña in La Democracia. The results showed that the housewives successfully adopted the practice of scrubbing washtubs and drums. The use of cloths to cover drums was very well accepted, particularly in those places where piped water was dirty and the cloth was used as a filter. The housewives were willing to purchase this cloth for as much as Q20.00 (equivalent to US\$3.20).

The results of the formative research activity made it possible to confirm the willingness of the target audience to participate in all three interventions. Communication, social mobilization, and other interventions were designed to complement the principal objective of controlling dengue vector breeding sites.

## 2.3 Implementation of the Primary Interventions

### 2.3.1 Communication Strategy

Messages were designed to promote the weekly scrubbing of washtubs with a brush, covering drums with cloths, covering above-ground water tanks, turning empty bottles upside down to prevent them from becoming breeding sites for *Aedes*, participating in clean-up campaigns in their neighborhoods or *colonias*, cooperating with voluntary inspectors, and ensuring that their yards and any empty lots located near their homes or workplaces were kept clean. In addition, messages were prepared to inform the population as to the symptoms of hemorrhagic dengue.

Training manuals and other informational and educational materials were prepared and pre-tested on the target population prior to being reproduced. The communication strategy was implemented using all

communications media: mass media and, in particular, interpersonal communications (see attached materials).

The central theme of the communication strategy was the location, prevention, and control of breeding sites. In addition, the topic of hemorrhagic dengue was addressed, with the public encouraged to seek immediate medical care.

Radio and TV materials were designed by advertising agencies and prepared by professional producers using the results from the baseline studies and the findings of the formative research efforts. The audiovisual material was filmed in the priority municipalities using local residents so that the target population would identify with the messages. Prior to final implementation, all of the spots (29 in total) were prepared as storyboards and pre-tested in Escuintla using local residents.

Initially, in order to call attention to the problem, radio messages on dengue and its mode of transmission were broadcast. During the 1997 rainy season, the mass communication campaign focused on specific behaviors for preventing the disease, using the slogan “*Dengue no me das*” [“Dengue, you won’t get me”] and the logo created by the project (see Figure 1). This material was broadcast not only in the department of Escuintla but also at the national level. The medium most frequently used was radio. As a result of the lack of funds, negotiations were successfully conducted to have the material broadcast free of charge on closed circuit TV in marketplaces and on local radio and cable television stations. Additional negotiations were carried out to have reports published in local newspapers, a decision that was eagerly accepted and supported by the general public and the business community, thus facilitating dissemination of the messages. Beginning in June, MOH resources were made available to broadcast the materials that had been prepared by the project on national radio and TV, in accordance with the attached script. In addition, nine billboards containing messages promoting dengue prevention were placed along highways throughout the country.

**Figure 1**  
**Campaign Logo**  
**DENGUE, YOU WON’T GET ME!**



### **2.3.2 Training and Community Involvement in Dengue Monitoring and Control**

In order to ensure that project activities would be sustainable and serve to strengthen future MOH activities, the community surveillance and control system was designed to have direct ties with health sector workers, who would act as community surveillance and control leaders. Accordingly, invitations went out to nurses, midwives, environmental sanitation inspectors, rural health technicians, social workers and

promoters, who were appointed institutional facilitators (*facilitadores institucionales*, or FIs). At the conclusion of the project, a total of 30 active FIs were working in 13 municipalities of Escuintla.

The groups of FIs each identified between five and eight volunteers, who were selected as individuals showing leadership within their communities; these volunteers were designated to serve as community facilitators (*facilitadores comunitarios*, or FCs). The FCs were organized into groups to promote implementation of the project action plan. The groups made up of FIs and FCs were trained by project personnel and experts in the particular subject matter in question. Subsequently, the groups prepared and implemented specific work programs aimed at achieving the project objective (see Figure 2, next page).

The FCs, in turn, recruited other volunteers to join them in forming community action groups to be devoted primarily to the control of breeding sites. In order to prevent new outbreaks of dengue, activities were initiated in high-risk neighborhoods and *colonias* identified on the basis of their levels of infestation with *Aedes aegypti*. A simple pictorial instrument for monitoring the community surveillance system (see Figure 3, page 10) was designed, and FCs were trained in its use. Based on the suggestions made by the target population, each volunteer inspector was given a metal name tag containing his or her name and the campaign logo. Through the radio spots, local residents were encouraged to cooperate with these volunteer inspectors.

The first stage of the work of the community groups involved reaching out to the community and sensitizing residents with regard to the symptoms and effects of the disease. This was achieved through meetings, health fairs, parades, carnivals, culturally-oriented gatherings and sporting events. These activities stressed that the disease may be deadly but that it is preventable with proper control of *Aedes aegypti* breeding sites. The second stage included household visits to identify cases involving fever, detection and control of breeding sites, and clean-up campaigns.

### **2.3.3 Training of Facilitators**

A training program for FIs and FCs was designed. The program consisted of three training workshops and two follow-up workshops. A manual was prepared containing technical concepts with regard to dengue and communications. A total of 30 workshops were held, for the 13 municipalities in the department, in which training was provided to 1,315 individuals, including residents, facilitators, graduate nurses, nurse auxiliaries, physicians, and mayors.

Facilitators were equipped with supplies such as overhead slides, puppets, triptychs, posters, and stickers to facilitate communication with the community and aid them in their work with residents. To promote the project, educational, surveillance, and monitoring materials were distributed along with 13,500 brushes for scrubbing washtubs. A total of 6,000 cloths for covering drums were distributed, together with triptychs containing information and calling for community participation. Due to the short life of the project, the community organization component, the educational campaign, and the training activity were carried out simultaneously and on an intensive basis.

### **2.3.4 Supervision and Follow-up**

Follow-up meetings and visits from project staff were conducted with each of the local groups. A community-level monitoring system was established, with a number of FIs serving as monitors. Project staff also provided feedback regarding surveillance data, educational talks, tests of new techniques, assistance for institutional and community facilitators, advisory assistance to the local groups, and distribution of materials.

In order to help sustain the activities beyond the end of the project, backpacks and Shannon tables were delivered to the JASE for distribution to each of the facilitators. Also included were booklets, educational materials, brushes and other tools and teaching aids designed to continue breeding site prevention and control activities.

In the project close-out meeting, the facilitators felt that it was important to continue surveillance activities even in the absence of project financing. At the time of this writing (May 1998), the dengue control and prevention system remains active, and the JASE has incorporated into its own staff the project personnel responsible for the community groups.



Figure 2  
Community-Based  
System of Dengue  
Surveillance  
and Control







**Figure 3  
Monitoring Sheet**

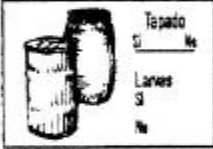
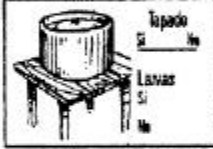
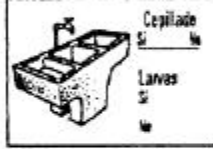
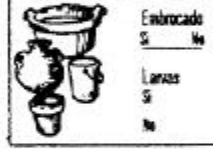
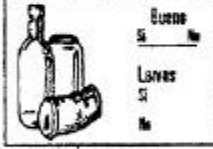

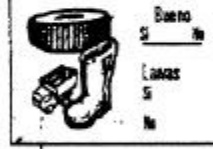
**SECTION A: GENERAL DATA**

Date: \_\_\_\_\_, 1997  
 Name of monitor: \_\_\_\_\_ Code: \_\_\_\_\_  
 Place: Department: Escuintla Municipality: \_\_\_\_\_ Code: \_\_\_\_\_  
 Colonia or neighborhood or address: \_\_\_\_\_ Code: \_\_\_\_\_  
 Household number (according to map): \_\_\_\_\_ Household (or) Business: \_\_\_\_\_  
 Name of interviewee: \_\_\_\_\_  
 Name of establishment: \_\_\_\_\_  
 (If none, product or article produced or sold)





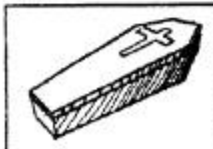

**B:**

				<input type="radio"/>
				

**C:**

				<input type="radio"/> Prácticas
				<input type="radio"/> Larvas

**D:**

				<input type="radio"/>
		MANIFESTACIONES HEMORRAGICAS SI NO		
TOTAL DE PERSONAS CON FIEBRE =				<input type="text"/>

RECOMMENDATIONS AND/OR ACTIONS FOR THE HOUSEHOLD

### 2.3.5 Community Mobilization

Information on the problem of dengue and on the project *per se* and its objective was provided to other sectors of the communities, including schools, churches, municipal governments, and the private sector. Participation of schoolchildren provided significant support to the community surveillance group. Schoolchildren and women in the communities distributed brushes, triptychs and cloths, while also teaching the correct way to wash tubs. They also participated in household inspections in collaboration with teachers and FCs. The private sector provided support and involvement by making meeting rooms, furniture, and vehicles available for distributing materials. Businesses also cooperated in the development of communications materials, etc.

Municipal mayors participated in an informational workshop in which they were provided with materials specially designed to involve them in dengue control activities. Several expressed an interest in collaborating with the project. At present, the mayors' offices in San Vicente Pacaya, Escuintla, La Democracia, and La Gomera are participating actively in dengue control efforts and have taken steps to improve the supply of potable water in their municipalities.

## 2.4 Additional Activities

### 2.4.1 Reducing Larva-Breeding Sites

#### *Hydroponics*

The larval survey showed that empty jars, cans, tires, and bottles found in a large number of households are potential breeding sites for *Aedes aegypti*. Since the population considers these items to be useful (i.e., nondisposable breeding sites), hydroponics was introduced to transform jars, cans, and tires into vegetable seedbeds. In addition, empty plastic gallon jugs and bottles were recycled as part of the cultivation process (for example, used to water plants and store watering solutions). Many people expressed an interest in this mode of cultivation, which represents a simple and economic way to enrich their food intake. Training was provided for 53 individuals (FIs) in this cultivation method. These individuals in turn provided training to 50 FCs, who subsequently replicated the training with other groups. In addition, ties were established with schools requesting information on this activity.

#### *Larva-eating fish*

Escuintla includes areas, such as the Chiquimulilla Canal, with high rates of infestation by *Aedes aegypti*. The canal and other such areas present a very difficult problem for mosquito control, since they involve waterways with constantly running water; however, biological control is an appropriate prevention method. Project personnel assessed the feasibility of using larva-eating fish, and tests were run using a number of different low-cost fish, both native and exotic. The results indicate that two species of fish have considerable larvivorous potential that could be used to control the production of *Aedes* larvae in hard-to-control natural environments: *Dormitator latrifons*, a native fish known as *pupo negro* or *pululo* that consumes an average of 1,000 larvae/day, and *Carassius auratus* (goldfish), an exotic aquarium fish that consumes some 600 larvae/day. Both adapted well to captivity and to local water conditions.

### 2.4.2 Institutional Strengthening

Strengthening was provided initially to the Ministry of Public Health and Social Welfare department's SIAS system, and the groundwork for the system was organized. A mutually beneficial joint work effort was achieved between the MOH and the IGSS, with positive results.

To strengthen the MOH's capacity in epidemiological surveillance, two high-capacity Pentium computers (one of them portable) and two printers were provided to the Escuintla Health Area Headquarters (JASE) for use by the Epidemiology Department.

### **2.4.3 Staff Training**

A number of training activities were conducted for the staff of the community-based dengue prevention and control system and for personnel from other sectors of Escuintla.

#### **# Clinical management of dengue hemorrhagic fever**

In order to strengthen the ability to diagnose DHF, a training event was held for staff of the MOH and IGSS in Escuintla. It was designed for resident physicians, graduate nurses, and nurse auxiliaries. The following subjects were covered: manifestations of extravasation of plasma, edema, hepatomegaly, hemoconcentration, Hb-Ht ratio, manifestations of a tendency to bleed, thrombocytopenia, differential diagnosis, and warning signs for dengue (abdominal pain and vomiting). The training included a demonstration of the tourniquet test.

#### **# Strengthening of the laboratory network in JASE health centers**

Visits were made to JASE health centers to assess the response capability to provide support in surveillance and follow-up of cases of DHF. The centers were provided with minimal inputs and trained in conducting basic laboratory tests to support the clinical diagnosis and follow-up. Laboratory personnel from health centers and hospitals were trained in conducting basic laboratory tests (hematocrit, white blood cell count, platelet count) that support the follow-up of patients with classic dengue as well as dengue hemorrhagic fever.

Inputs for conducting the tests to be used for follow-up of cases of suspected hemorrhagic dengue were procured and distributed through the JASE. All technical personnel working in the health centers and hospitals of Escuintla, with the exception of La Democracia, were given two days of training in INCAP laboratories in the proper way to conduct these tests. Staff were encouraged to involve themselves actively in the diagnosis and follow-up of cases of dengue showing hemorrhagic manifestations. Training was provided to a total of 24 individuals, who were given detailed methodological protocols as well as the laboratory glassware to run them.

#### **# Training of environmental sanitation inspectors and laboratory technicians in monitoring water quality**

During the course of the project, intra-household water sources were inspected. It was determined that two of the principal causes of morbidity in the region continued to be diarrheal diseases, including cholera. To address this problem, a training event was held to demonstrate the proper techniques for assessing potability of water. Personnel from the Escuintla health sector (environmental sanitation inspectors and rural health technicians) and delegates from the 13 municipalities in the department were trained in techniques for determining levels of residual chlorine and in the use of rapid tests for determining water potability (presence of fecal coliforms). In addition, an evaluation of each municipal water distribution system was conducted, and a report containing specific recommendations was submitted to departmental authorities.

#### **# Training in qualitative methods**

Training in qualitative methods was provided to 18 health workers with a view toward strengthening the ability of service personnel to use formative research techniques. Participants were drawn from both the IGSS and the MOH and represented a broad spectrum of professions, including health center director, social worker, and health promoter. The training included one week of

discussions of the methodology, together with practice in the principal data-gathering techniques. The second stage of the training dealt with the application of this methodology to a topic of specific interest to the area headquarters: the acceptability of immunizations. Participants were divided into two groups and gathered data in two municipalities (Guanagazapa and Santa Lucía Cotzumalguapa) during eight field trips. Interviews were conducted in individual households, and focus group discussions were held in health service centers. The training included analyses of the data collected and drafting of the final report.

## **2.5 Future Needs and Needs Outside Escuintla**

### **# Formation of a school for training in health**

At present, the MOH finds itself unable to fill a number of vacancies due to the scarcity of individuals able to meet the contracting requirements imposed by the government. To support the training of human resources with technical knowledge in integrated health, the project supported the creation of a community school that will operate as an entity attached to the Escuintla Health Area Headquarters. Desks, chairs, office furniture, audiovisual equipment and laboratory equipment for teaching purposes were procured. A training manual was prepared for vector technicians. The content of the training program was set forth in a technical document that includes all information related to vector-borne diseases.

### **# Extension to other areas in the southern region of the country**

In June 1997, USAID approved an additional amendment extending certain activities to other areas of the southern coast that were experiencing serious problems with dengue. Project personnel, in collaboration with the MOH through the Escuintla FIs, organized and conducted three intensive workshops in which information was condensed and an invitation was extended to implement community surveillance systems in the municipalities of Amatitlán, San Miguel Petapa, and Villanueva in the department of Guatemala, as well as in the departments of Retalhuleu, Mazatenango, Quezaltenango (Coatepeque), Santa Rosa, and Jutiapa. Printed informational and educational materials were distributed and billboards were erected along the principal highways in the region.



# 3

## MONITORING AND EVALUATION

### 3.1 The Monitoring System

The monitoring system was developed from a series of data-gathering instruments previously pre-tested on the population of Escuintla. With assistance from JASE staff and from project personnel responsible for the community system, suitable individuals were selected to assume responsibility for implementation and coordination of the monitoring system.

The monitoring form, the sampling map, the evaluation of the “Say no to dengue” campaign, the findings sheet for the campaign, and a series of letters to aid in making a random selection of households all contain guidelines for the FCs and FIs.

The workshops provided technical and logistical information on monitoring activities, as well as practice and evaluation. A total of 41 FCs and 11 FIs participated in the workshops. The initial workshop provided information that was reinforced and put into practice in the second workshop. Monitoring was carried out in the five priority municipalities, with the greatest success recorded in Santa Lucía Cotzumalguapa, La Gomera, and Puerto de San José as a result of the willingness and efforts of the FIs in those three sites. Monitoring activities were conducted between June and August 1997.

#### 3.1.1 Monitoring as Social Participation

The monitoring system was designed so that the communities would participate actively in measuring and analyzing the *Aedes aegypti* breeding sites detection and control campaign, using a very simple, easy-to-use pictorial form (see Figure 3). The FCs consolidated the results obtained by the inspector and volunteer monitors. Depending on the findings, local-level personnel would reinforce the messages at the household level. In neighborhoods where infestation remained despite the recommendations of community inspectors, the FCs took other types of actions: requesting reinforcement or cloths and other informational and educational materials from their FI, or support from schoolchildren in the area. This process served to establish a streamlined flow of information and decision-making at the local level and made it possible to institute corrective actions aimed at decreasing the levels of larval infestation. Each FC delivered the completed form to his or her FI, who in turn delivered it to the JASE epidemiologist. In this way, case surveillance and recording was improved. In addition, monitoring made it possible to measure the degree of exposure to preventive messages (see Graph 2) and to provide objective supervision and evaluation of the FIs’ performance, not only by their immediate superiors but by the JASE as well.

## Graph 2 Trend Toward the Reduction of Infested Washtubs Based on Local-level Monitoring

### 3.1.2 Supervision and Quality Control

Project personnel supervised the use of the monitoring instrument and decision-making activities at the local level. This process made it possible to apply a quality control mechanism that was outside the community surveillance system, which in turn made it possible to make changes along the way in order to ensure appropriate monitoring of project activities. Quality control was critical to ensure implementation of the monitoring program and to see that it met its objectives.

### 3.2 Evaluation of the Project

For a number of reasons, the evaluation design did not include a control group. First of all, since the MOH expected a large outbreak of dengue along the entire southern coast, no area or portion of the population of Escuintla was excluded from the intervention. Secondly, it did not seem ethical to have a control group. In addition, since most of the messages were disseminated at the regional and national levels, it would have been impossible to isolate a single area. Also, since the intervention was designed to be implemented by the population itself, it was impossible to predict the actual level of implementation, even though the residents themselves asked to participate in the dengue prevention campaign. What was required was a design that would measure the effect of the intervention in relation to the degree of exposure to project interventions. This effect was measured by comparing larval indices and the knowledge and practices of the population exposed to the interventions. Thus, the evaluation included two components, knowledge and larval infestation, which were measured by comparison of the baseline and final surveys.

The results of the final evaluation indicate that the percentage of infested households was similar during the baseline and the final. However, the degree of infestation diminished significantly as shown by the Breteau and breeding site indices in the final evaluation. This indicates that the severity of the infestation by *Aedes aegypti* diminished significantly after the educational and communication interventions of the project. The final evaluation did not include visits to the households that had been inspected in the baseline survey. If that had been done, there might have been a significant reduction of the household index. Due to cost, logistics, and time implications, random sampling of households occurred in the final survey.

In the final month of the project (August 1997), project personnel administered a final survey of knowledge and behavior regarding the elimination of breeding sites to the same population included in the final larval survey (n = 1,073), randomly selected from the five most infested municipalities. The purpose of this final survey was to assess the effect of the interventions promoted by the project in terms of knowledge and practices in controlling vector breeding sites. Exposure was measured by means of an indicator that grouped together households in accordance with the medium, or combination of media, to which they were exposed. Three types of intervention were identified: community participation, social mobilization, and institutional mobilization.

**Community participation and social mobilization:** Included exposure of the respondent to messages distributed at the local level by family members, teachers, schoolchildren, or parishioners or through the workplace.

**Communications media:** Included exposure to messages transmitted via radio, television, loud-speakers, written materials, *mantas*, or billboards.



**Institutional:** Included exposure to messages distributed by health sector personnel, FCs during inspection visits, volunteers working with the community dengue surveillance and control system, and community personnel in charge of monitoring.

Based on the type of intervention to which they were exposed, the following subgroups were identified:

- # Not exposed: The household was not exposed to any of the project activities.
- # Exposed to one: The household was exposed to only one type of intervention.
- # Exposed to two: The household was exposed to only two types of intervention.
- # Exposed to three: The household was exposed to all three types of intervention.

The results of this analysis are presented in the section on project achievements.



# 4 PROJECT ACHIEVEMENTS AND LESSONS LEARNED

**The principal achievement recorded by the project was the fact that, in 1997, NO outbreaks of DHF were recorded in the department of Escuintla.**

Achievement of the project goal was largely due to the successful implementation of a number of activities, particularly the community surveillance system which was predicated on the operation of a local monitoring system, the necessary social mobilization, and the careful selection of a few interventions aimed at controlling breeding sites at the household level. These results are described below.

1. The project created a community surveillance system, tied to the health sector, which could be self-sustaining following the conclusion of project financing for the prevention and control of dengue. The perseverance and highly responsible work of the groups created deserve recognition and continued encouragement in order to preserve the successes to date.
2. Project personnel implemented a monitoring system based on a simple pictorial instrument which could be filled out by volunteers trained and motivated to take decisions at the local level. The monitoring system provided feedback at the household level. Monitoring was supervised by means of a quality control system implemented by project supervisors. Community monitoring made it possible for Escuintla health authorities to institute three activities:
  - # closely track the performance of FIs,
  - # detect cases of illness occurring as a result of inadequate control of breeding sites,
  - # carry out specific activities designed to prevent the outbreak from reaching significant levels during 1997.
3. The total number of cases of classic dengue recorded in the 1997 epidemiological year was less than that reported in 1996, particularly between weeks 28 and 33, which was the period during 1996 that witnessed the outbreak that sparked the concern of the MOH (see Graph 3). This decrease took place in a period during which the surveillance and recording of cases of dengue in Escuintla improved significantly. In addition, a monitoring system that resulted in the proactive reporting of cases at the level of the JASE was implemented. Also, cases of dengue treated in the Escuintla IGSS were included in MOH statistics.
4. Work was aided by the existence of baseline data on the level of knowledge of both the disease and its breeding sites, which facilitated outreach work and ensured active community participation in the selection of the interventions to be implemented.
5. Public knowledge of the dengue vector's breeding sites and water cycle improved significantly: whereas prior to the project only 2% of those surveyed could name three or more breeding sites for *Aedes aegypti*, in the final survey about 30% could correctly name three or more such sites, and 76% could identify at least one breeding site correctly (see Graph 4).
6. The Breteau, household, and container indexes decreased in proportion to exposure to project interventions (see Graph 5).

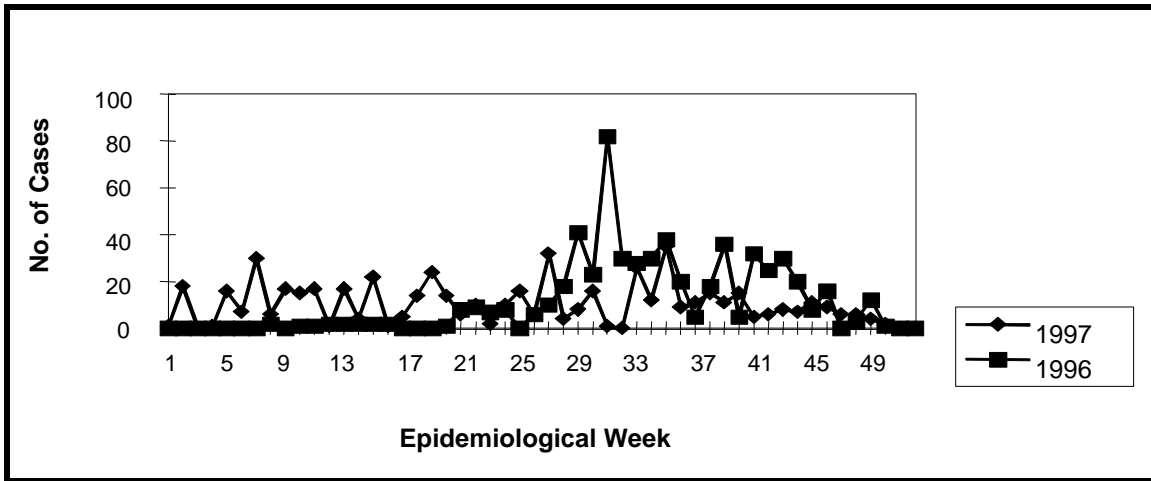
The following lessons from this activity may be useful to others working in dengue prevention and control.

1. The community should be actively involved in identifying and solving its own health problems, and the solutions proposed should take into consideration the prevailing sociocultural, environmental, and economic conditions.
2. For any interventions to succeed, the community must be probed with a view toward determining its points of view and creating a frame of reference for participants, together with a common language to facilitate the acceptability of project interventions.
3. Both the baseline research (on knowledge and practices of the population, levels of larval infestation, and principal breeding sites) and the activities designed to ascertain the feasibility of project interventions are extremely important elements in undertaking community interventions.
4. To ensure the effectiveness of both educational materials and messages, formative research needs to be conducted, and the findings pre-tested on the target population, prior to widespread dissemination.
5. The social communications campaign was most effective due to the fact that message design was based on the knowledge and practices of the population of Escuintla, as well as on the breeding site data taken from the baseline study. The results obtained indicate that the messages disseminated by means of mass media served to complement the one-on-one activities conducted by the inspectors and voluntary monitors involved in the community surveillance system.
6. A participative surveillance and monitoring system makes it possible to ensure optimum use of health sector resources, facilitates health sector outreach efforts, extends coverage, and enables authorities to objectively supervise their own personnel (FIs).
7. Sectoral integration (e.g., IGSS-MOH-community) is both necessary and feasible for implementing local-level programs in order to successfully achieve project goals.

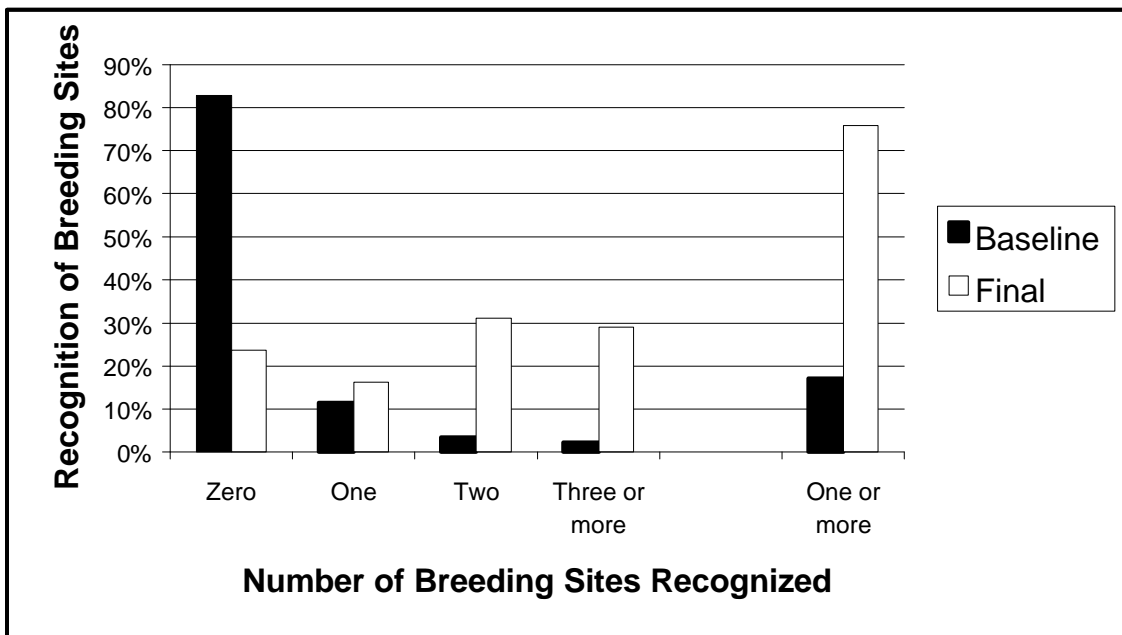
Volunteer facilitators can play an important role if:

- # the jobs they are asked to do are within the actual abilities of each volunteer,
- # they are well trained and motivated and have established ties to the health sector,
- # they are provided with up-to-date information, specialized literature, and teaching instruments, and
- # they receive appropriate supervision.

**Graph 3**  
**Cases of Dengue in the Department of Escuintla**



**Graph 4**  
**Knowledge of Breeding Sites Before and After the Intervention**



**Graph 5**  
**Changes in Rates of Infestation**

