ENVIRONMENTAL HEALTH PROJECT

ACTIVITY REPORT

No. 3

A Review of National Cholera Plans
in Guatemala, Honduras, and Ecuador

John Paul Chudy

December 1994

Prepared for:
ENVIRONMENTAL HEALTH DIVISION
OFFICE OF HEALTH AND NUTRITION

Center for Population, Health and Nutrition
Bureau for Global Programs, Field Support and Research
U.S. Agency for International Development

USAID

ENVIRONMENTAL HEALTH PROJECT

ACTIVITY REPORT

No. 3

A Review of National Cholera Plans
in Guatemala, Honduras, and Ecuador

John Paul Chudy

December 1994

with contributions from
David McCarthy, BASICS

Prepared for the Bureau for Latin America and the Caribbean,
USAID/Guatemala, USAID/Honduras, USAID/Ecuador
and the Bureau for Global Programs, Field Support and Research
Office of Health and Nutrition
U.S. Agency for International Development
under the Environmental Health Project, Activity No. 020

CONTENTS

ACKNOWLEDGMENTS

The Environmental Health Project wishes to extend special appreciation to four individuals who provided invaluable assistance during the implementation of this activity: Tim Rogers, who conducted research in Washington in pulling together all the documentation on cholera plans and on financial support extended to the study countries; Dr. Fidel Arevalo, who provided in-country research and interview support in Guatemala; and Dr. Enrique Gil and Dr. Mercedes Torres, who provided research and technical support for the review in Honduras and Ecuador, respectively.

ACRONYMS

ADDR	Applied Diarrheal Diseases Research Project
AER	Association of Radio Broadcasters-Ecuador
AGISA	Guatemalan Association of Sanitary Engineers
BASICS	Basic Support for Institutionalizing Child Survival
CARE	CARE international private voluntary organization
CDC	Centers for Disease Control
CDD	Control of Diarrheal Diseases program
CFR	case fatality ratio
COPECAS	Coordination Committee for Water and Sanitation-Guatemala
ECU	European Currency Units
EHP	Environmental Health Project
EMPAGUA	Water utility-Guatemala City
ESA	external support agency
FHIS	Social Investment Fund-Honduras
FIS	Social Investment Fund-Guatemala
FISE	Social Investment Fund-Ecuador
GOE	Government of Ecuador
GOH	Government of Honduras
HEALTHCOM	Communications for Health Project
HPN	health, population, nutrition
ICDDRB	International Center for Diarrheal Disease Research-Bangladesh
IDB	Inter-American Development Bank
IGSS	Guatemalan Social Security Institute
INCAP	Nutrition Institute for Central America and Panama
INFOM	Institute for Municipal Development-Guatemala
INGUAT	Guatemalan Tourist Institute
LAC	Latin America and the Caribbean (bureau of USAID)
LUCAM	Unified Laboratory for Food and Medicine-Guatemala

MOH	Ministry of Health
NGO	nongovernmental organization
ORS	oral rehydration solution
ORT	oral rehydration therapy
PAHO	Pan American Health Organization
PHN	population, health, nutrition
PRITECH	Technology for Primary Care Project
PVO	private voluntary organization
RSD	regional sustainable development
RWSN-CA	Regional Water and Sanitation Network for Central America
SANAA	Servicio Autónomo Nacional de Acueductos y Alcantarillados (Honduras)
UNICEF	United Nations Children's Fund
UPS	productive health unit-Honduras
USAID	United States Agency for International Development
WASH	Water and Sanitation for Health Project

EXECUTIVE SUMMARY

Between June and August 1994, the Environmental Health Project (EHP) and the Basic Support for Institutionalizing Child Survival (BASICS) Project jointly conducted a review of national cholera plans in 3 of the 20 Latin American and Caribbean countries affected by the 1991 outbreak of the disease. The study team in charge of the review looked at the extent to which the plans in Guatemala, Honduras, and Ecuador were an appropriate response to the epidemic, how government implemented the plans, which components of the plans were most effective, whether or not there was any correlation between what was said in the plans and what was done, the effectiveness of assistance from collaborating agencies, including the Agency for International Development (USAID), and lessons learned. The team's findings are based on a desk review of existing documents and field visits to the three countries.

Two Approaches to Implementing Cholera Activities

National plans were written for all three countries, but only Guatemala and Honduras used them to implement their cholera activities. Ecuador instead followed a committee approach for implementation. Both approaches were equally effective.

In Guatemala, a plan was drafted in 1991 and updated in 1993, but its implementation was spotty. After preparing the national plan, the Ministry of Health (MOH) sent it to provincial directorates (health areas) that were expected to ratify or draft their own plan based on the central plan. What actually was done at the health area level is unclear, although some implementation at that level did occur independently of the central cholera committee and national plan.

In Honduras, a plan written in 1991 served as a guideline for cholera plans at the national, health area, and health center levels. Of the three countries reviewed, Honduras was the only one to follow its plan consistently in implementing cholera activities.

In Ecuador, a 1991 plan written by the Pan American Health Organization (PAHO) in Washington, D.C., was used only to seek funding from the international community. Locally, no plan was written, but an implementation strategy was developed by the national cholera committee that initially emphasized three areas of action -- social communication, water and sanitation, and epidemiological surveillance. Components were added when the committee felt it necessary to do so. This approach was conveyed to the provinces, where committees were formed around the same initial three action areas and expanded as required. The national committee asked the provincial committees to further modify their plans to reflect local needs.

Measuring the Appropriateness of Responses to the Epidemic

Experience with cholera programs in the hemisphere since 1991 shows that most plans or strategies contain seven core areas -- epidemiological surveillance, laboratory diagnosis, water and sanitation, food hygiene, case management, social communication and education, and logistics. The EHP and BASICS projects decided, therefore, that the criterion for determining the appropriateness of a cholera response would be this set of seven key areas. A plan or strategy that met this criterion would be considered an appropriate response.

As noted above, although Guatemala wrote a plan in 1991, it was not well implemented. Epidemiological surveillance and data reporting there have been highly suspect, and most of the other components in the plan were also found to have been poorly implemented. A 1993 revision of Guatemala's national plan addresses weaknesses in the 1991 version while including all seven of the core areas, but implementation has yet to take place.

In Honduras, the 1991 plan was consistent with the seven components and was implemented as planned. In Ecuador, the spirit of a plan was apparent in the actions emphasized by the national cholera committee and provincial cholera committees.

Plan Effectiveness

How the various national governments implemented their cholera plans varied widely. Honduras's approach was the most consistent. There, the central government developed a national plan that it then shared with regional and area health officials for ratification and use as a model for their own plans. Conversely, implementation of Guatemala's written plan apparently was weakened by the independent actions of some health areas. In Ecuador, the committee strategy was implemented first at the central level, and then extended to affected provinces. Implementation was consistent at both levels.

In terms of components addressed in the national approach, Honduras and Ecuador shared some versions of all seven key plan areas. The Guatemala plan did not formally mention case management or logistics, although, in practice, a large part of the external assistance the country received was used to provide case management supplies.

The following table summarizes the seven key plan components by country and their level of effectiveness as reported by program officials.

Effectiveness of Plan Components

	Epid. Surv.	Lab. Diagnosis	W&S	Case Mgmt.	Soc. Comm.	Food Hygiene	Logistics
Guatemala	*	*	*	nc	*	***	nc
Honduras	**	**	*	*	**	**	***
Ecuador	***	*	***	*	***	*	*

Key: * = weak
** = average
*** = very effective
nc = no component

Having a plan did not ensure effective component implementation. Although Guatemala and Honduras both have written plans, only Honduras has enjoyed some success in carrying out its plan's actions. Ecuador, with no written plan, implemented effectively epidemiological surveillance and water and sanitation activities, and had some success with social communication activities.

Plan Targets and Achievements

In Guatemala, plan targets were not consistently followed. There, only the food hygiene component was effective, apparently because of a highly motivated person in charge in Guatemala City. In the water and sanitation sector, much of the work carried out was reported to be outside of the plan. Other components of the plan were not followed.

In Honduras, the team observed a good fit between what was said and what was done. The logistics component achievements were consistent with plan targets. Also, food hygiene targets were well addressed under plan implementation, and social communication targets were addressed as specified in the plan. The team observed weaknesses only in the water and sanitation sector and in case management. These last two areas might have benefited from technical assistance to strengthen service delivery and monitoring capacity.

Achievements in Ecuador reflect the emphasis the national and provincial committees placed on target areas. A noted failure is in case management, which the committees neither emphasized nor addressed.

Effective Use of Assistance from External Sources

National cholera plans were an effective tool for channeling external support in the three countries studied. Most external support came from PAHO (specific country support through PAHO came from Sweden and Holland), USAID, the Inter-American Development Bank (through PAHO), and the European Community. In Guatemala, it was unclear whether decisions about external support were based on plan targets, or whether their apparent fit with some plan targets was merely coincidental. Fifty-six percent of the dollar value of external resources in Guatemala was used in case management, despite the component's exclusion from the 1991 written plan.

The use of external resources in Ecuador was consistent with the areas the national cholera committee chose to emphasize. Plan implementors were satisfied with lessons learned in epidemiology, water and sanitation, and social communication, suggesting a good fit between external resources and the way the provincial committees operated. In Honduras, external resources were used as specified in the plan, even in erring on the side of too much material supply for case management and too little technical assistance to put the supplies to optimal use.

General Conclusions and Recommendations

The three countries studied approached the development and implementation of their cholera actions quite differently. While Guatemala and Honduras both had prepared plans, only Honduras followed through from the national level down to the local level. The Hondurans may have placed too little emphasis on the need for technical assistance to improve case management, as it has had the highest case fatality rate in the region, at more than 2 percent. Admittedly, the country's low incidence rate from 1991 to 1993 did not provide health personnel with many direct opportunities to improve their cholera case management skills,

which in part may explain the high case fatality ratio.

Meanwhile, Ecuador's committee approach proved very effective in mobilizing resources. By giving provincial committees responsibility for coordinating activities at their level, the national committee enabled provincial-level agencies and nongovernmental organizations (NGOs) to leverage their resources and achieve more than they could have alone. The experience has encouraged the MOH to retain these committees, and to rename them "provincial health committees" with expanded agendas that include all public health issues, not just cholera.

The three study countries' plans were an appropriate response to the epidemic. Honduras and Ecuador addressed all seven core plan components, and Guatemala five. This suggests that planning helped focus the countries' efforts and, as a result, their programs appeared to be consistent with one another. Honduras was the most consistent in terms of following its written plan, while Guatemala's follow-through seemed coincidental rather than intentional (for example, plan implementers were active in case management, which was not a formal component of their plan).

Successful components varied by country. Food hygiene was the most effective component in Guatemala, but as noted above, this was due more to the motivation of the individual in charge than to plan management. In Honduras, logistics was the most successful component, but epidemiological surveillance, laboratory diagnosis, social communication, and food hygiene also enjoyed some success. Ecuador's three core components of epidemiological surveillance, water supply and sanitation, and social communication were implemented effectively.

Lessons Learned about National Cholera Plans

Good planning: In all three countries, the development of a national cholera plan served an important function in getting authorities to focus on the crisis and to think about strategies for dealing with it.

Working without a plan: In Ecuador, where no written plan was followed, a successful set of actions nonetheless flowed from a decentralized committee approach.

Lessons Learned about Addressing Cholera

Proper social communication: Interventions must be understood by, and be compatible with the cultural characteristics of, the target population. Ecuador's planners acknowledged that in order to be effective, educational campaigns must first motivate and sensitize at the macro level, and later focus actions and treatment at the micro level, especially toward at-risk groups. Also, as shown in Ecuador, latrinization programs can benefit from having the educational component precede construction. In Honduras, social communication about cholera is credited with a decline in the incidence of childhood diarrheal disease.

Decentralization of cholera activities: In Ecuador, the cholera epidemic provided the impetus for the creation of provincial committees, which responded very effectively by coordinating cholera activities appropriate for their jurisdictions. In Honduras, local involvement in the plan was undermined when cholera became politicized and attracted heavy presidential involvement.

Sectoral coordination: In many Latin American countries, social investment funds (FIS) programs have been started. These programs have become heavily involved in latrinization and water projects, but usually are not well coordinated with other efforts in the water and sanitation sector, nor with national cholera plans. Key problems with these programs are their lack of hygiene education and the absence of attention to economic sustainability in the form of community participation and cost recovery.

Safe water: The term "safe water" is increasingly used to describe water that is bacteriologically safe. The term opens up opportunities for addressing water quality monitoring issues, and for promoting household-level disinfection as the last line of defense against cholera and diarrheal disease.

Technical assistance: Ecuador's experience demonstrates the effectiveness of technical assistance. By drawing extensively on external support agency technical assistance in social communication, Ecuador produced a variety of messages directed at macro and micro levels that MOH officials say were responsible for raising social awareness and reducing disease incidence. However, almost no technical assistance was brought in to strengthen case management skills, and Ecuador's case fatality ratio remained almost unchanged from 1991 to 1993. This situation was exacerbated by the national government's reliance on intravenous solution over oral rehydration therapy (ORT), which increased program costs. Had some of the domestic resources been directed to ORT and to technical assistance, the case fatality ratio might have been different.

Follow-up: Unless actions that have been implemented are consistently reinforced, achievements made in attacking and preventing cholera are unlikely to be sustained, especially those related to behavioral changes among at-risk populations.

Recommendations

1. USAID should continue providing assistance within the context of national cholera plans.

2. External support agencies should encourage the channeling of social investment fund resources within the context of national cholera plans.

3. Safe water messages and practices should be promoted to households that are not serviced by piped water.

4. Health messages should be based on epidemiological investigations and the study of high-risk behaviors, and should be targeted appropriately.

5. Case management should be standardized and improved through new training and supervision strategies.

1 INTRODUCTION

1.1 Background

Between 1991 and 1994, the United States Agency for International Development (USAID), through its Bureau for Latin America and the Caribbean (LAC), made available approximately $13 million in material and technical support to assist countries affected by the 1991 outbreak of cholera in Latin America. Shortly after the arrival of the El Tor cholera pandemic in Peru in January 1991, each country in the region developed, at the initial urging of the Pan American Health Organization (PAHO), a national plan for cholera control and prevention that was to serve as a management tool to help countries channel resources to identified areas of action. USAID resources, like those of PAHO and other external support agencies (ESAs) such as the United Nations Children's Fund (UNICEF), were provided to help mitigate the crisis within the context of these organized cholera plans in countries requesting assistance. USAID cholera funds were channeled through several United States government agencies and programs, including the Centers for Disease Control (CDC) and the Public Health Service Supply Center, and appropriate USAID projects, including the Applied Diarrheal Diseases Research Project (ADDR), the Communications for Health Project (HEALTHCOM), the ORS Procurement Project, the Technology for Primary Care Project (PRITECH), the Water and Sanitation for Health Project (WASH), and the Quality Assurance Project.

By 1994, cholera had become endemic in most of the region, except in Brazil and Central America, where it continued to increase at epidemic levels. With these changing trends in the disease, USAID wanted to know how effective the national cholera plans had been in meeting their respective objectives and in managing and programming external and domestic resources.

This evaluation represents an attempt by two of USAID's cooperating projects, WASH (now the Environmental Health Project or EHP) and PRITECH (now the Basic Support for Institutionalizing Child Survival, or BASICS, Project), assisted by PAHO, to assess the role of the national cholera plans.

1.2 Purpose and Methodology

The purpose of this review was to assess the progress to date in implementing the national cholera action plans developed by the national cholera coordination committees in Latin American countries. The review was carried out in three countries – Guatemala, Honduras, and Ecuador – which were chosen because of their high incidence of cholera, easy entry for consultants, and the excellent cooperation USAID missions and counterparts historically have extended there. The study team examined the plans of the three countries to determine whether the plans were an appropriate response to the epidemic, how governments implemented the plans, which components of the plans were most effective, whether there was any correlation between what was said in the plans and what was done, the use of assistance from collaborating agencies, including USAID, and the general lessons the plan implementation process offers.

The study team collected data in two stages. First, a desk review of existing documents developed by USAID, PAHO, and other ESAs was carried out in Washington, D.C. This was followed by country visits during which locally available documents were reviewed, and interviews were held with key personnel of the national cholera coordination committees and key individuals from related organizations and agencies, ESAs, nongovernmental organizations (NGOs), private voluntary organizations (PVOs), and the private sector. For a list of persons contacted, see Appendix A.

In-country, the approach was first to interview the head of the national cholera coordination committee, followed by interviews with key people associated with each component outlined in the respective national plan. Analysis of data was geared toward determining whether the respective actors understood what was happening in a real-world context as they were implementing the plan, particularly if activities varied from the written plan. Through its data analysis, the team also tried to determine which plan components were emphasized, and whether emphases changed over time to identify whether a process of rational decision-making was followed. The team did not evaluate the soundness of the national cholera plans, nor determine whether input from USAID or other ESAs reduced mortality or morbidity incidence, or reduced or prevented the spread of the epidemic.

The findings and lessons learned from this activity are expected to serve as input for the offices of USAID/LAC/RSD/PHN[1] and USAID/G/PHN[2] in the design of future technical assistance strategies for cholera. It is also expected that the results will be helpful to ESA members of the Regional Water and Sanitation Network for Central America (RWSN-CA), other countries throughout Latin America, and several African and Asian countries that are dealing with endemic cholera.

The Washington desk review and country visits took place in June and July of 1994. The team visited Guatemala and Honduras from June 5 to 25, and Ecuador from July 18 to 22.

1.3 Organization of the Report

Chapters 2, 3, and 4 of this report present the findings for Guatemala, Honduras, and Ecuador, respectively. Chapter 5 compares and contrasts the approaches followed in the three countries. It also presents comparative data on external financial support and how these resources were used. An attempt is made to link these data to plan performance in each country. Finally, Chapter 5 presents some general conclusions and lessons learned from the overall plan implementation experience that may be applicable to other countries dealing with cholera.

---

[1] RSD stands for "regional sustainable development"; PHN stands for "population, health, nutrition."

[2] G stands for "global."

2 CHOLERA IN GUATEMALA

2.1 Incidence

The first case of the El Tor cholera pandemic in Guatemala was confirmed on July 24, 1991. The number of reported cases remained low throughout that year, but late in 1992, and in 1993, began to increase slightly while beginning to decrease in South America. From the first case in 1991 to November 1993, 46,702 cases were reported in-country, although the real count is probably higher, given questions and uncertainties that surround the way information has been collected. (In comparison, Guatemala's population in 1993 was 9,735,000.) For example, a two-month Ministry of Health (MOH) strike in 1993 suggests that cholera had gone away over that period. Whatever the true numbers, no one disputes now that cholera is raging at epidemic levels in Guatemala, and that too little, or even inappropriate, action has been taken to arrest its spread. In 1994, Guatemala's national cholera coordinator anticipates that there will be between 50,000 and 60,000 cases, which represents an increase of between 40 and 50 percent over the previous year. The country's cholera case rate, that is, the number of cases per 1,000 population, has gone from 0.40 in 1991 to 3.14 in 1993.

2.2 Actors in Cholera Control and Prevention

On February 7, 1991, the Pan American Health Organization (PAHO) representative in Guatemala informed the MOH that cholera had broken out in Peru, and suggested that the already high rate of diarrheal disease in the country made Guatemala susceptible to the disease. In response, the MOH moved to develop a plan to control and minimize the disease in-country. The MOH assumed a leadership role and moved to engage national, international, government, nongovernment, and private sector actors in an effort to confront the disease. Three committees were formed: one to coordinate action at the national level, one to define areas of international emphasis, and one to make policy.

The National Committee for the Surveillance and Control of Cholera, formed to coordinate action at the national level, comprised representatives of the following groups:

- the MOH as coordinator,
- the ministries of external relations, government, education, and agriculture,
- INGUAT, the Guatemala Tourist Institute,
- IGSS, the Guatemalan Social Security Institute,
- military sanitation,
- the University of San Carlos,
- the municipality of Guatemala City,
- INFOM, the Institute for Municipal Development,
- PAHO.

The Inter-Agency Committee was formed to coordinate and define areas of international assistance, and was originally made up mainly of international financial and technical assistance agencies operating in the country. These included UNICEF, the World Food Program, the Rotary Club, USAID, PAHO, and the MOH.

Today, the World Food Program and the Rotary Club have been replaced as members by the Nutrition Institute for Central America and

Panama (INCAP), Clapp & Mayne (USAID's bilateral contractor in health), and Cooperación Italiana.

Finally, the Technical Committee was designated as the coordination and policy-making body. This committee originally consisted of members of the following organizations:

- MOH's Division of Disease Surveillance and Control;
- the divisions of environmental sanitation, human resources, food hygiene, school health programs, and the Unified Laboratory for Food and Medicine (LUCAM);
- the permanent Coordination Committee for Water and Sanitation (COPECAS);
- the Guatemala City water utility (EMPAGUA);
- science faculties at the University of San Carlos;
- municipal sanitation department;
- INCAP;
- municipal fire department;
- USAID;
- UNICEF; and
- PAHO.

Currently, the Technical Committee manages cholera prevention and control in Guatemala, and is now made up exclusively of MOH technical divisions. The committee is chaired by a general coordinator, a position that was created in 1993 when the 1991 cholera plan was reformulated (see Section 2.3). Divisions of the MOH that form the Technical Committee include the following:

- human resources,
- environmental sanitation,
- food hygiene,
- epidemiological surveillance,
- logistics, and
- investigation.

The MOH has been the biggest player in the country, and accounts for major actions taken domestically. This appears to explain the Technical Committee's shift toward cholera control.

2.3 Guatemala's Health Care Delivery System

The MOH is one of Guatemala's largest ministries, with approximately 22,000 employees. Services are organized by health areas, with one health area corresponding to each of the country's 24 departments (states). Theoretically, the health care referral system for patients begins at the health post, the first level of care, which is staffed by health auxiliaries. Health centers are the second level of care, and provide higher-quality out-patient services than do the health posts; some also provide in-patient services. Finally, at the third level are hospitals.

In Guatemala, 785 health posts are located in county seats (*municipios*) or larger villages in the departments, 28 percent of which lack the minimum equipment to function properly. Of the 220 health centers, 188 do not provide in-patient service. Sixty-seven percent of the centers lack adequate equipment. Of the 35 hospitals (serving a total of 10 million people) located at the district or regional level, 70 percent are reported to be deteriorating.

Apart from poor facilities, the limits of the MOH's service provision are underscored by national coverage figures: the ministry reaches only 25 percent of the population. Another 15 percent of the population are served by IGSS. The private sector reaches another 14 percent, most of whom have adequate economic resources to pay for the services. Finally, some 350 nongovernmental organizations (NGOs) provide some type of support to Guatemala's health care system.

A large portion of the population serviced by Guatemala's health care system live in isolated areas, or in areas where the MOH's health posts are not always attended by staff. Yet, like other sectors of the society and the economy, health care is heavily concentrated in the formal urban areas. While only 20 percent of the country's 9.7 million people live in the capital, 45 percent of hospital beds and 80 percent of doctors are located there. Moreover, poor coordination exists among the various providers, and no standard referral system operates to help make the most efficient use of existing services. In addition, health spending accounts for only 1.3 percent of the gross national product.

In short, Guatemala's health care delivery system is plagued by excessive bureaucracy, duplication of effort, inefficient use of resources, and poor administration. Moreover, prevention efforts, according to the MOH, have been passed over in recent years in favor of curative services, which have accounted for the majority of health sector spending.

It is within this environment that the designers of Guatemala's national cholera plan had to try to make an impact on the prevention and control of the disease. The national plan provided health area directors, in consultation with their health center and health post personnel, a model by which to fashion actions at the local level as well as to define how to use existing resources. However, the team found no evidence that the components of the plan were implemented uniformly across the country's 24 health areas. In fact, some interviewees reported that there was conflict between the central government and regions at the health area level.

In terms of USAID cholera assistance, of a total of $1,500,014 provided to date, 54 percent has been used to purchase intravenous solution, laboratory supplies, and oral rehydration supplies. The balance has been programmed for various technical assistance packages to strengthen aspects of either epidemiological surveillance, case management, or preventive measures. PAHO, whose support came from the governments of Sweden and Holland, provided materials and/or technical assistance in excess of $890,000. Although activities carried out in Guatemala between 1991 and 1993 and financed by external support agencies (ESAs) fit into one or more of the components of the 1991 plan, the team was unable to determine whether this had happened because of the plan or merely by coincidence. What is certain is that the greater degree of spending on curative measures—mainly case management—than on preventive strategies has been consistent with recent health sector history.

How Guatemala's national cholera plan evolved from 1991 to the present provides some further understanding of how effective it has been as a management tool.

2.4 National Cholera Plan

2.4.1 Background

At the suggestion of PAHO, the Ministers of Health of Central American countries met in Panama on April 24, 1991, to examine and discuss the threat cholera posed in the region, and issued a resolution laying the basis for formulating a subregional plan to control and prevent cholera. The ministers met again from May 15-17, in San Jose, Costa Rica, and devised a plan to be presented to the international community to solicit funding and support for cholera control and prevention programs. The group decided that national plans would be the basis of implementing the subregional plan. Cholera was viewed as the result of acute shortages of water (78 percent of urban areas suffered from shortages, as did 50 percent of rural areas), poor environmental sanitation, and inadequate food control and housing, among other factors. The plan of action the group decided on contained a standard set of five project components: epidemiological surveillance, laboratory diagnosis, water and sanitation, promotion and education,

and case management. PAHO would coordinate cooperation.

In October 1991, Guatemala's MOH released its national plan laying out a series of priority projects that included the same ones presented by the ministerial group. The national plan was in turn sent to the regional health areas for their review and for the development of regional plans based on local needs. (The assessment team was unable to determine whether regional plans were actually developed. This was due in part to the travel restrictions USAID placed on the consultants, and also in part to the fact that the national-level interviewees were unable to produce an example of a regional plan.)

The assessment team was unable to determine how effective the 1991 plan was in channeling resources. Comments from various interviewees suggest that it was followed fairly closely at the central level, and that it had served as an effective tool to attract resources from the international community. However, as shown in Section 2.5, many institutions, especially private sector groups and NGOs implemented activities independent of the plan. Moreover, area and district chiefs at the health area level reached accords among themselves on actions in the plan as well as on other actions that sometimes were in conflict with the central government. Within the MOH structure, the central plan served as a model for Guatemala's public health care delivery system, but the system's weaknesses nonetheless affected the delivery of cholera services.

In 1993, a sudden change of government and the steadily increasing number of reported cases prompted the MOH to step back and take a look at cholera control and prevention measures provided in the 1991 plan. An interagency commission headed by the MOH was formed to assess the plan. The commission found the plan to be inadequate in meeting the challenges of the continuing and growing epidemic, especially with respect to prevention.

In the 1991 plan, as little as 10 percent of available resources were used for preventive measures such as water and sanitation and hygiene education. Instead, most of the actions taken from the time the disease first broke out in the country had been directed at case management – though this was not formally written into the plan – and other curative measures. The interagency commission criticized the performance of past activities and in November 1993 drafted a revised plan that emphasized preventive over curative measures, with almost 97 percent of resources to be allocated for water and sanitation infrastructure and hygiene education.

2.4.2 Current Plan

The MOH interagency commission formed in 1993 to look at Guatemala's cholera problem in light of the increasing case rate observed that there had been some successes in laboratory diagnosis, in case management (despite there being no formal component for case management in the 1991 plan), and in the improvement of basic sanitation in some communities. The commission also noted that significant shortcomings existed with respect to an information system on diarrhea and cholera, decision-making, emphasis on prevention versus curative assistance, follow-up and evaluation on actions taken, effective policies, and attention to water and sanitation. As a result, the commission's new plan identified nine areas of attention and required a total budget of 487,508,000 quetzals (Q), or US$86 million. The nine areas are as follows:

1. Policy decisions (intended to seek political and financial support for the plan), including establishing a national coordination position, which was done on December 1, 1993.

2. Human resources (capacity building and coordination at all levels).

3. Epidemiological surveillance.

4. Logistics.

5. Management capacity (strengthening of management at the local level).

6. Case management.

7. Inter- and intrasectoral coordination.

8. Promotion and education.

9. Environmental sanitation (to improve water quality and basic sanitation services).

The reformulated plan had just been distributed to the 24 health areas in the country for comment and use in the development of their respective regional plans at the time of this assessment. Shortly after the interagency commission completed its report in 1993, the MOH went on strike and much of the momentum obtained in reviewing the 1991 plan was lost and has yet to be regained. The following discussion, therefore, addresses the components of the 1991 plan.

2.5 Review of 1991 Plan Components

The 1991 plan addressed six components: epidemiological surveillance, laboratory diagnosis, water and sanitation, food protection, social communication, and evaluation. It had a budget exceeding US$10 million.

2.5.1 Epidemiology

The assessment team had limited success in finding out much about this component. Available documentation suggests that PAHO provided training and technical support to local efforts in epidemiological surveillance and reporting. In addition, apparently USAID provided case management supplies, including oral rehydration solution (ORS) packets and intravenous solution, as part of this component because of the plan's lack of a formal case management component. How effective these inputs were is perhaps best captured in the 1993 MOH interagency commission report, which led to the revised national cholera plan. The commission cited the following shortcomings:

- Late detection of outbreaks,
- Information restricted to health services,
- Very little community participation,
- Underestimation of the magnitude of the epidemic,
- Weak epidemiological surveillance,
- Reactive epidemiological surveillance,
- An incomplete norms manual,
- Poor information system,
- No utilization of existing database,
- No utilization of proven and developed instruments,
- No utilization of risk criteria to define preventive actions for at-risk groups,
- Little information available to groups that do not have access to health services, and
- Lack of information-sharing within and among private sector and other organizations.

2.5.2 Laboratory Diagnosis

This component of the 1991 plan emphasized the strengthening of laboratory facilities throughout Guatemala over a four-year period. The plan proposed a budget of approximately $1 million for this component, of which more than 80 percent was to come from external sources, to establish seven regional laboratories and to strengthen the national reference laboratory of the MOH, which is called LUCAM. Strengthened facilities were to lend greater quality control over water, food (both restaurant and industrial), and ice. PAHO provided some support to this component in terms of equipment and training (see Appendix B for more detail). The team was unable to determine how effective

PAHO's support was, or how much was achieved through the component generally.

2.5.3 Water and Sanitation

PAHO reports that the bigger cholera outbreaks in Guatemala are attributable to poor water quality, and that the smaller outbreaks are attributable to inadequate food hygiene. A third problem in cholera transmission, in PAHO's view, is attitudes regarding personal behavior. In terms of ranking, water quality is clearly the most significant of these.

The 1991 plan's guidelines for this component were not followed. The plan had outlined six water and sanitation action areas: latrine manufacture and distribution in Region III, repair and improvement of water systems in high-riskareas, chlorination of water in small rural systems in high-risk areas, installation of 400 manual pumps and improvement of artesian wells in high-risk areas, latrinization in rural communities in Region VI, and basic sanitation in peri-urban areas of Guatemala City. The 1993 interagency commission cited almost 20 major deficiencies in the implementation of the plan. In addition to resources, which are always lacking, coordination, organization, and policy guidance were probably the elements most in need.

Fifty percent of the resources required to meet Guatemala's water and sanitation needs are said to exist in the country, but the appropriate management and coordination critical to the efficient use of the resources have yet to be achieved. Management and coordination problems take two forms. First, there are a large number of agencies and groups involved in building infrastructure with no coordination between them. This has led to duplication of effort and, more seriously, to an inconsistent approach in terms of policy guidance and standards for the infrastructure that is put in place. Second, many of the financial resources available in-country are either used inefficiently or underutilized because government agencies feel compelled to design and build the systems as well as to train the communities to run them, rather than to contract the private sector for as much of this work as possible. The outcome of this approach is inefficiency and gross underutilization of existing financial resources.

In an attempt to improve the 1991 national cholera plan, the Guatemalan Association of Sanitary Engineers (AGISA), convened a two-day seminar in June 1991 to develop a specific plan for water and sanitation that presented a series of actions for short-, medium-, and long-term implementation. This plan too was never implemented.

Under the AGISA plan, short- and medium-term actions were developed to address immediate challenges presented by the cholera epidemic in terms of water quality and basic sanitation in higher-risk areas, and a set of long-term actions (7 to 10 years out) were intended to address more globally the problem of water coverage and quality, and sanitation coverage. With a budget of approximately $45 million, it was a very ambitious plan. However, it did offer a mechanism to address the issue of coordination and management. The plan had proposed the creation of five commissions to coordinate actions in the water and sanitation sector. One commission each would be devoted to rural water and sanitation, urban water and sanitation, solid waste, food hygiene, and hospital waste. Organized under COPECAS (the permanent committee for the coordination of water and sanitation), which is an integral member of the national cholera Technical Committee, the commissions would have brought some order to the chaos that characterizes the 30 or so agencies involved in water and sanitation in Guatemala. Instead, most of the activities implemented in the sector have been independent of the national cholera plan.

Two activities stand out as important even though they are being implemented independent

of the national cholera plan. The first began in 1991, when USAID initiated a $10 million project in support of water and sanitation in the Guatemalan highlands. The five-year project objective is to improve the health status of the highlands rural poor through the reduction of diarrheal disease. Through the project, two hundred potable water systems and 24,000 latrines will be constructed in 300 communities in six departments of the western highlands.

The second noteworthy activity being conducted outside the national cholera plan is a program run by the international private voluntary organization (PVO) CARE. CARE has been programming resources for water, sanitation, and hygiene education in Guatemala for a number of years. In 1992 and 1993, the agency accessed cholera funds from the LAC Bureau through the WASH Project. CARE used the funds to develop a behavior-based monitoring system for one of its larger projects. However, CARE has been implementing its activities independent of the national cholera plan.

Meanwhile, PAHO has developed a $100,000 program to chlorinate water supplies in 20 communities identified as being at high risk for cholera.. PAHO has funded $30,000 of the program and is presently searching for donors to cover the balance. The spirit of this activity is consistent with the revised, 1993 national plan.

The study team also found that a large number of NGOs have been active in water and basic sanitation, but have operated totally independent of the cholera plan. Complicating the picture further has been the entrance of the Social Investment Fund (FIS), which has started constructing water and sanitation facilities throughout Guatemala. Because the objective of the FIS program is employment generation, it does not lend itself easily to the parameters of a health program like a national cholera plan. Yet the FIS is a sizable player with considerable resources. Moreover, because the FIS is an employment generator, it pays for many of the inputs—such as local labor and materials—that traditionally have been borne by community members under NGO or national development projects financed by bilateral donors. An effort should be made to channel FIS resources that go to water and sanitation infrastructure within the context of the national cholera plan.

In summary, Guatemala's water and sanitation objectives under the 1991 cholera plan were not carried out. Any accomplishments were probably coincidental.

2.5.4 Food Hygiene

The 1991 plan laid out four-year objectives for developing and implementing improved surveillance of hygiene conditions in food processing plants, street-vendor carts, and food markets, as well as for improved data collection and monitoring. To some extent, plan objectives have been met. In Guatemala City, the Department of Food Hygiene late in 1992 instituted a program for the licensing and monitoring of water tanker trucks. The confidence level in this program is high in that about 80 percent of the tankers are thought to be complying with it. Training programs for food vendors, especially street vendors, with support from PAHO, have been instituted in urban areas, and the perception among officials is that the program has been effective. Similarly, major markets in the higher-risk areas in the country where cholera cases have been reported were visited by health officials, and improved hygiene practices have been impressed upon sellers in these markets. Extension visits to markets also addressed improved waste disposal practices. The plan had budgeted about $2 million for this component, of which about $900,000 was to come from external sources.

2.5.5 Social Communication and Training

This component focused mainly on food sellers and handlers. Training and promotion was to be directed at health sector workers who, in turn, would monitor and train food handlers. In addition, promotion would be directed at the general public to raise awareness about food hygiene and the care consumers should take when buying prepared or raw food in markets. In 1993, the MOH interagency commission found this effort lacking in several respects. First, promotion and education were neither systematic nor sustained. Second, promotion and education were not directed at prevention, but more at alerting consumers to be aware during the crisis period. Finally, the commission observed that educational messages often reflected very little of the local reality, tending instead to be more of a standard message, such as, "Do not buy food from street vendors," rather than being based on epidemiological data or investigations.

2.5.6 Evaluation

The intent of this component was to evaluate the implementation of cholera control and prevention activities in Guatemala at least three times a year. Evaluation reports would then be provided to participating institutions so that service delivery and impact could be improved. Apart from the assessment that the MOH commission conducted in 1993, the study team found no evidence that any evaluations were carried out, much less three times a year. The MOH commission noted among the general problem areas the deficiency of coordination among and between sectors in terms of planning, implementation, and evaluation.

Although the 1991 Guatemala plan failed to address case management as one of its components, the plan did account for it. Why case management was left out of the 1991 plan is difficult to understand, given that more than half of the dollar value of external assistance was directed toward provision of case management supplies. The introductory sections of the plan address the national health situation and the need for training, but none of the subsequent component sections is directed toward case management, nor do any sections mention case management training specifically. As was cited above, most training appeared to be directed at food hygiene. Perhaps the MOH plan preparers took for granted case management, given Guatemala's hospital infrastructure. Following this logic, it would be unnecessary to plan for something that would get preferential treatment. Another explanation would be that none of the main ESAs—such as PAHO, UNICEF, and USAID—was involved in the plan's final preparation.

2.6 Other Cholera Activities

As described above, together the MOH, the IGSS, and the private sector, provide health services to about 54 percent of Guatemala's population. This formal health care delivery system was the main mechanism for implementing actions under the 1991 national cholera plan. In addition to this formal sector, NGOs provide some input. One of these, Fundazucar, operates on a relatively large scale providing service to communities in five health areas.

Fundazucar is the Guatemalan sugar industry's social arm. The sugar industry, both at the plantation and refinery level, is concentrated in five departments of southeast Guatemala: Guatemala, Santa Rosa, Escuintla, Suchitepéquez, and Retalhuleu. When the cholera epidemic broke out in July 1991, Fundazucar decided to extend assistance to control and prevent the spread of the disease. It has provided and continues to provide the following services:

- In 1991, organized a forum to publicize its intentions of extending assistance to control and prevent the spread of cholera.

- Printed and distributed 30,000 educational posters among municipalities in the five departments.

- Purchased and distributed 10 tons of chlorine to municipalities in the five departments.

- Distributed more than 350,000 ORS packets to health posts, health centers, and MOH hospitals, and to units of the IGSS and to municipalities.

- Trained and equipped 150 rural health promoters.

- Equipped and provided a mobile unit for use in the cholera campaign in the five departments.

- Trained 100 nurses in its Technical Vocational Institute who now work in hospitals in Escuintla and Mazatenango.

- Through sugar refineries, mounted a contingency plan to address cholera among their workers, families, and communities.

- Provides training for IGSS health promoters who work in the five departments (IGSS is concentrated in these departments more than are the MOH services).

- Strengthens services to sugar workers to include educational videos, ORS salts, and water chlorination, as well as other needs as they arise.

- Coordinates monthly meetings with medical personnel in the region to discuss the epidemic's progress.

- Provides medical equipment, materials, and other inputs to the hospitals of Coatepeque, Mazatenango, and Escuintla, as well as to health centers in San Antonio, Suchitepéquez, Santa Lucía Cotzumalguapa, and Patulul.

- Collaborates with the MOH in the transport of 5,000 latrines to communities in the southern coastal area.

- Is developing and implementing 116 potable water projects in communities of the southern coastal area. To date, more than 40 percent have been completed.

These actions have been or are being carried out with the knowledge of the MOH and IGSS. However, how closely each of them is implemented within the framework provided by either the 1991 or the 1993 plan is unclear. It appears that Fundazucar is working independently of the plan, but in collaboration with the MOH in some instances. The manner in which Fundazucar has worked, and the impact it has had, probably were responsible for the 1993 commission's observation that coordination between the public and the private sector must be improved.

2.7 The Plan and External Assistance

The Guatemalan government's budget for the 1991 national cholera plan was US$329,000. USAID contributed US$1.5 million and PAHO, US$891,024. (A summary of financial resources provided to Guatemala by external support agencies is provided in Appendix B.)

Guatemala's use of assistance from all external sources appears to be consistent with the national cholera plan. Approximately 54 percent of USAID assistance was used for the purchase of intravenous solution, ORS, and related case management supplies. The remaining 46 percent was provided in the form of technical assistance. This support was consistent with the plan. Most official actions in the plan were directed at case management, and therefore resources received from external as well as internal sources were used accordingly. Some of the technical assistance, such as the support to CARE for the development of a behavior-based monitoring system, while relevant to cholera control and prevention, was not explicit in the plan.

2.8 Lessons Learned

Guatemala's national cholera plan and its implementation offer the following lessons.

Management Function: Although the 1991 plan was not implemented as described, it did fulfill a planning and management function by providing a reference point for measuring progress. In 1993, when the MOH saw the number of cholera cases surpass 30,000, it realized it was putting most of its effort into case management at the hospital level, while expending little effort on case management at the community level. The MOH also acknowledged it was paying even less attention to prevention.

In evaluating what the 1991 plan proposed to do, the 1993 interagency commission found some successes, including laboratory diagnosis capability in identifying cholera, utilization of resources to obtain inputs, reduction in mortality, formation and training of some local committees, and the improvement of water and sanitation in some communities. In this regard, the plan served as a framework for external support agencies, especially PAHO and USAID, who were the largest donors. Material assistance intended to be used for case management, namely ORS packets and intravenous solution, was programmed according to the plan. Similarly, training and equipment for the purpose of improving epidemiological surveillance were performed and used according to the plan's broad outlines.

However, the commission also noted many of the 1991 plan's shortcomings, including poor management of information on diarrhea and cholera, centralized decision-making, absence of risk and equity criteria in defining actions, a focus that was almost exclusively curative, a shortage of resources, the lack of coordination within and between agencies, and deficient management overall. As a result, many available resources were poorly utilized.

Uncoordinated Activities: Guatemala's Social Investment Fund (FIS) has established itself as a significant player in the water and sanitation sector, but well outside the context of the cholera plan. Such a lack of coordination weakens the potential for FIS programs to improve health and to make a positive contribution to development. Better coordination of FIS programs would not only help improve preventive efforts to control cholera, but would also strengthen recent attempts in the sector to provide infrastructure that is economically sustainable, and therefore is more beneficial to public health over a long period of time.

A Second Chance: The 1993 revised plan gives the MOH a second chance to improve its performance. However, the Ministry's strike that year disrupted this effort, and the momentum that was gained with the interagency commission's review has yet to be recaptured. Political leadership has been absent. The elections of August 1994 will affect the current cholera campaign, and may reinvigorate the 1993 effort.

Social Communication: Information sent to people through the private sector and through official channels has conveyed the messages that "cholera kills" (and that therefore treatment in hospitals is required), and that services in hospitals and health centers are better than those at home. As a result, the MOH found its facilities and staff overrun and unable to address prevention issues. Messages must be crafted to address the risks for contracting cholera, and must educate people about what they can do first to prevent the disease and, second, to treat themselves. Messages that instill fear should be avoided.

3 CHOLERA IN HONDURAS

3.1 Incidence

Although cholera arrived in Honduras in October 1991, when compared with its neighbors, the country's disease incidence remained low until only very recently. (In comparison, the incidence rate in Guatemala in 1993 was more than six times higher.) As of June 10, 1994, the cumulative number of cholera cases since 1991 totaled only 5,283, but more than 4,000 of these occurred in the previous 12 months. (For comparison purposes, Honduras's population in 1993 was 5,240,000.)

During 1992 and 1993, while the epidemic was increasing at a faster rate in both Guatemala and El Salvador, the low incidence in Honduras attracted the attention of neighboring government officials who wanted to know what Honduras was doing right. This elevated the importance of prevention and control actions to the level of the presidency, but in so doing, produced a downside effect of centralizing both decision-making and plan implementation.

The sudden increase in cases Honduras experienced in 1993-1994 stemmed from the floods of September and October 1993. The prevention efforts that had been credited with holding down the number of cases, such as generic health messages, were not as effective when the flooding accelerated disease transmission. Up to that time, specific actions in the country's cholera plan—especially social communications and the high political visibility given the crisis—were thought to have helped hold down the incidence of disease. However, although incidence increased only recently (starting at 0.002 per 1,000 population in 1991, and rising to 0.51 per 1,000 in 1993), the case fatality rate has been high throughout the epidemic, at greater than 2 percent, while the rate has been about 1 percent in most other Latin American countries.

3.2 Actors in Cholera Control and Prevention

The main player in cholera activities in Honduras since the 1991 outbreak has been the Ministry of Health (MOH) and its various divisions, including epidemiological surveillance, laboratory, environmental sanitation, health services, education and social communication, logistics, and communications. In 1991, each of the divisions formed a subcommission to fight cholera. Other entities that lent, and are lending, assistance include the Ministry of Government, the Presidency of the Republic, PAHO, UNICEF, USAID, SANAA (Servicio Autónomo Nacional de Acueductos y Alcantarillados), and local municipalities.

3.3 National Cholera Plan

3.3.1 Background

The Honduras Plan for the Prevention and Control of Cholera, released in February 1991, was an effort to mobilize resources on an emergency basis that would be implemented through the MOH's national health care delivery system. Essentially the plan provided guidance for regions, areas, and health care units (health centers and hospitals) to design and implement emergency measures at their respective levels. The plan presented approaches for seven components:

logistics, water and sanitation, food hygiene, social communication, epidemiological surveillance and outbreak control, laboratory diagnosis, and improvement of health services. In addition, PAHO made available to international agencies a plan drafted by local ministers of health in San Jose, Costa Rica, in May 1991. The Costa Rican plan addressed the same components as the Honduras plan, and therefore was used to solicit additional technical and financial support from the international community to complement national cholera efforts. This plan was therein more a funding document than an action plan.

In April 1994, the MOH presented a new draft plan emphasizing the continuation of the same seven components presented in the 1991 plan, but this time integrating them into its Control of Diarrheal Diseases (CDD) program as one more element of diarrheal disease management. This decision was made for two reasons, one being political—the Liberal Party that assumed power in March 1994 following national elections wanted to redefine the CDD program to fit its platform of modernization and decentralization (called *municipalización*)—and the other reason being administrative. Having observed that the emergency cholera measures implemented under the 1991 plan had reduced the incidence of diarrheal disease in children, the MOH now felt that integration of cholera control and prevention efforts with the CDD program would have an even greater impact on diarrheal disease reduction overall.

3.3.2 Political Constraints

When the assessment team began its review in Tegucigalpa on June 13, 1994, there soon arose confusion about the existence of one single plan. Several documents, in addition to the PAHO Costa Rican document, were identified, including the February 1991 plan, an April 1991 strategy document, and an undated cholera strategy document that appears to be a hard copy of overhead slides. Part of the confusion stemmed from the electoral change of government at the national level in March 1994, when the Liberal Party took office. The new political appointees now occupying key positions in the MOH and elsewhere in the government suggested to the assessment team that no uniform plan had existed from 1991 to 1994. In addition, some international agency observers suggested that no coherent plan existed prior to the April 1994 integrated draft plan. However, as interviews proceeded, especially with career health professionals at the subcommission level and at the regional and area levels, a pattern of subcommission, regional, and local plans consistent with the February 1991 plan was soon established.

The February 1991 plan was an outline that provided guidance to MOH units at all levels on how to proceed in an emergency. Although initially a decentralized plan, its implementation turned out to be centralized and fairly vertical. According to the former national cholera committee coordinator, following the development of the 1991 plan at the central level, officials from the various divisions of the MOH traveled around the country to provide oral instruction to regional health officials about how the plan should be adapted and implemented at the regional, area, and local levels. Regional health officials were instructed to organize rapid response teams to respond to outbreaks in their region.

After Honduras's low reported case rate attracted regional political attention, the presidency became involved both to take credit for and to try to ensure a continued low incidence rate. One consequence was that rapid response teams were fielded from the national level whenever outbreaks occurred, undermining regional and local efforts. These brief visits also masked the seriousness of the disease by conveying a message that the disease was under control once the national response teams departed. This experience led to the observation

that to be sustainable, plan implementation should not only be decentralized initially but should be maintained that way, as well.

3.4 Review of Plan Components

The following reviews the essential elements of each of the national cholera plan's seven components.

3.4.1 Logistics

This component was fully implemented. Commodities received were efficiently delivered and inventoried, and continue to be for the most part. The plan specifies maintaining a minimum stock of intravenous solution and accessories, oral rehydration solution (ORS) packets, antibiotics, chlorine, and laboratory materials sufficient to treat 10 patients at each productive health unit (UPS). When an outbreak occurs at the UPS level, additional stocks from the regional warehouse are sent in where needed. A fairly efficient system of fax machines and radios connect the regional warehouse with UPSs in health areas, as well as with the capital.

Through 1992 and 1993, Honduras's logistics system worked well. The problem facing the MOH now is the resupply of intravenous solution and accessories, chlorine, antibiotics, and reagents for water quality testing kits. Most of the inventory handled has been provided by USAID. The most recent shipment received from USAID was on December 12, 1993, and will probably be the last the Government of Honduras (GOH) will receive from the agency. The challenge now is to determine how to maintain inventories based on the national budget. Normal health care supplies are financed from the national budget, while cholera preparedness during the last two years has been supported with funds outside the budget. Normal UPS supplies intended for other health care probably will have to be extended to cholera patients, putting the system under further stress.

An additional logistical burden stems from the way commodities were distributed under the early emergency phase of the cholera plan. Even health centers at which no cholera cases were reported received supplies. In these areas, unused stocks have now become outdated. Distribution based on diarrheal disease rates or actual cholera incidence might have put the stocks to better use.

3.4.2 Water and Sanitation

The 1991 plan outlined the following action areas under this component:

- household disinfection,
- chlorination of water systems,
- water quality monitoring,
- repair of installed systems in high-risk establishments (for example, markets and hospitals),
- disinfection of rural wells,
- organization and training of water committees,
- control of water tankers,
- construction of public standpipes and disinfection of water, along with training in barrios of difficult access, and
- organization of municipal chlorine banks.

MOH efforts at the regional and community levels were well intended, but limited in coverage and sustainability.

Water service coverage, water quality monitoring, and basic sanitation coverage are three areas in which very little was achieved due to a lack of both resources and capacity. For example, monitoring the quality of water sold by tanker trucks serving peri-urban areas of Tegucigalpa was initiated but was not sustained for very long because of the lack of know-how,

lack of a policy on water quality, and lack of resources. Also, municipalities failed to follow up on their responsibility to treat water and monitor water quality. The latest cases of cholera have occurred in municipalities that have failed to maintain water quality (for example, El Paraiso), due to the absence of a monitoring routine and either a lack of resources or a lack of motivation to obtain resources through water-use tariffs.

Data on basic sanitation coverage and usage are unreliable, but it is estimated that 63 percent of urban and rural Hondurans have access to basic sanitation. The Honduran Social Investment Fund (FHIS) is implementing a large latrine construction program under which approximately 22,000 units have been completed so far. Although it is meeting some degree of need, the program poses challenges in terms of health and general development, as its main objective is employment generation rather than health care, and customary approaches to community participation are not being followed. Additionally, although labor and local materials are fully paid for, there is no cost recovery. In terms of health impact, latrines built early in the program (1992) were not complemented by hygiene education and, as a result, are little used. (The program now contains an education and promotion component that is currently being evaluated.)

FHIS promotes only a simple ventilated improved pit model latrine, which may also explain the low usage rates under its Honduran program. While other groups are also promoting this model, other options might be appropriate under certain conditions. Differing opinions prevail about the appropriateness of the latrine technologies being used.

3.4.3 Food Hygiene

The 1991 plan urged education, promotion, and quality control in six action areas: education and training for all food sellers; improvement of the hygiene practices of street vendors; improvement and monitoring of, on a permanent basis, the hygiene of food markets; improvement and monitoring of the food hygiene conditions in restaurants and hotels; monitoring of the hygiene practices of food processing installations; and development of safe alternatives for the production of green and leafy vegetables. As an emergency plan, these actions were broadly and well implemented through 1992 and 1993. The difficulty now is sustainability. Under the new national government's decentralization program, the MOH will try to transfer the responsibility to municipalities.

3.4.4 Social Communication

The early mass media effort in this component was grand in scope and largely financed by the private sector, but messages were based on known risks, (for example, those in Peru), not on local experience. When disease hit, messages remained unchanged. Additionally, PAHO and MOH personnel reported that the majority of outbreaks were associated with water, yet messages continued to stress food hygiene.

The national plan defined five areas for behavior modification through educational efforts, including mass media. These were hand washing, treatment of water with chlorine at the household level, food handling in the home and from street vendors, proper use of a latrine, and use of ORS salts. The areas were not based on epidemiological data, however, but rather were a standard set of behaviors that, while relevant, are

not directly related to how people contract cholera. The problem was exacerbated by the private sector, which, though generous with its resources, advertised its products with cholera messages attached to them. Many of these messages generated unwarranted fear on the part of consumers by suggesting that cholera could kill them, and that the use of a particular maker's product might save their lives.

3.4.5 Epidemiological Surveillance and Outbreak Control

Until the end of 1993, Honduras only reported laboratory-confirmed cases of cholera, which led to suspected underreporting. Now, the case definition no longer requires laboratory confirmation of all cases. After the first confirmed case in an area, cases of severe diarrhea in persons older than five years of age are counted as cholera cases. A central-level unit has been established at which suspected cholera cases are reported on a daily basis. The unit in turn provides weekly reports to the relevant MOH units. Upon notification of a suspected case, central- and regional-level personnel mount an intensive series of interventions at the community level designed to control the outbreak. This proved successful until the flooding in September and October of 1993, when widespread outbreaks occurred.

3.4.6 Laboratory Diagnosis

All regional laboratories in Honduras are capable of culturing and identifying the cholera vibrio; however, the central laboratory has no set procedures for sampling isolates for the purposes of tracking the epidemic and monitoring drug resistance.

3.4.7 Improvement of Health Services

In 1991, all MOH health service providers and supervisors were trained in cholera case management. However, the low incidence rate limited the "real-world" opportunity for these technicians to apply their new skills and improve them hands-on. Health personnel in other countries, such as Peru, have benefited from a learning curve made steep by a higher incidence rate. When Honduras's cholera rate edged up sharply in 1993, the unused skills acquired two years before did not hold health personnel in good stead. Moreover, there had been no follow-up to the 1991 training. Other factors influenced skill levels as well. For example, norms manuals were not completely accurate in describing case management techniques. The cumulative effect of these factors is that Honduras is reported to have one of the highest cholera case fatality rates in the western hemisphere, at 2.6 percent. (There exists little difference between the hospital case fatality rate and the nonhospital case fatality rate, 2.4 percent versus 2.7 percent.) In June 1994, retraining at the hospital level was initiated.

3.5 The Plan and External Assistance

The GOH's budget for the 1991 national cholera plan was approximately US$1 million. USAID contributed US$1.117 million, PAHO US$561,444, and FHIS US$8.75 million through an InterAmerican Development Bank loan. (A more detailed breakdown of financial resources provided to Honduras by external support agencies is provided in Appendix B.)

Honduras's use of external assistance, from USAID and other sources, was generally consistent with the national cholera plan in one or more of its components. The plan itself was

appropriately focused, yet little coordination existed among components. For example, some stocks of intravenous solution expired before they could be used, suggesting an oversupply. Thus, questions remain about the criteria used for distributing intravenous solution and related equipment. The logistics unit decided on a minimum stock for 10 patients at each health center, rather than basing distribution on diarrheal disease incidence or trends in cholera incidence. As a result, health centers in areas that to date have never reported cholera cases have outdated supplies, while centers with a high number of cases are in short supply.[3]

Meanwhile, the assessment team learned that poor lab procedures could have been improved had some short-term technical assistance been brought in to complement the materials supply. The impact of the technical assistance provided for the development of case management norms appears to have missed its intended goal. Several features of the norms were not consistent with WHO recommendations. Specific examples include the excessive stress placed on renal failure with the use of bicarbonate in acidosis and added potassium. The resulting case management is thus excessively complex and requires several other medications (KCL, NaHCO3, diuretics) as part of the cholera medications. Yet, in reality it appears that these other drugs are not being used, and generally the WHO guidelines are followed. It is confusing to have the norms differ from practice.

Technical assistance on water quality initiatives might have helped advance a monitoring system that could have averted the later outbreaks in communities where treatment systems neither monitor water quality nor treat water. Yet given that there are over 100 urban and over 2,000 rural systems in Honduras, water quality monitoring and treatment programs take time to implement regardless of technical inputs. Great improvements have been made over the last five years in this area, but there is still a long way to go.

3.6 Lessons Learned

Honduras's national cholera plan and its implementation offer the following lessons:

Continuity: Obviously, an emergency plan cannot be sustained over a long period of time. However, the emergency phase of a plan can help create an enabling environment that protects public health in a sustainable way. An emergency creates opportunities for linkages between good epidemiological data, health information systems, and communication with the public. An emergency also creates opportunities for, and often forces, government and private agencies to work together to make a plan work. In Honduras, different divisions of the MOH discovered that they could work together harmoniously.

Decentralization: Although Honduras's original national cholera plan was designed to be implemented at the local level, politics rapidly overtook the rational planning methodology and hurt the plan. The involvement of central government figures in local outbreaks undermined the impact of plan activities by sending the public the wrong signal when the national figures returned to the capital, giving the impression that the danger had passed.

Decentralization not only leads to better implementation because it engages local authorities, it also maintains credibility in a program over time. A role exists for strong central involvement, but it should be to support local efforts with the latest technologies and approaches necessary for preventing and

[3]According to USAID officials, the estimation of needs was based on an expected number of cases, corresponding to the experience of other countries in the region. To date these cases have not materialized. However, the expiration is also related to the fact that these supplies arrived only 6-8 months before their expiration dates.

controlling the spread of disease. The "doing" should be left to local authorities.

Interagency Coordination: Coordination among the national cholera committee, local groups, and international agencies was weak. Following initial contacts in 1991, there was little-to-no formal effort made to coordinate activities or share information among the agencies. While a fair criticism to level at the national cholera committee, circumstances, including the low incidence rate, and the decentralized approach contributed to this situation. As a consequence, when cholera accelerated in 1993 and 1994, these linkages were not in place to help deal with the problem of providing services and attention to actual and potential cholera victims.

Sectoral Coordination: As in Guatemala, the Honduran Social Investment Fund (FHIS) has become a big player in providing sanitation services (almost exclusively latrines) in peri-urban and rural areas. Yet FHIS has stressed employment generation without due consideration of national health care objectives. Coordination with the national cholera plan is essential to ensure that not only employment is increased, but that health objectives are also addressed. Similarly, coordination with nongovernmental organizations working in the sector is essential to ensure that coverage in high-risk areas is addressed. Coordination also should consider the longer-term issue of economic sustainability of infrastructure, one aspect of the FHIS program that is glaringly weak. As an employment generation program, FHIS is not concerned with the challenges of cost recovery, and thus its presence undermines the efforts by other agencies or groups that work in the same or contiguous areas.

Technical Assistance: Case management practices under the national plan's implementation, which are faulted for the high case fatality rate in Honduras, were weak in part because external resources brought in were mostly material. Technical assistance for case management, especially for training and training reinforcement, might have helped reduce mortality rates. Similarly, technical assistance for water quality control and monitoring might have helped avert some of the municipal system outbreaks of cholera. In summary, technical assistance should be considered an important part of resources brought in through a national cholera plan.

Social Communication: Under its national cholera plan, Honduras experienced a remarkable decline in childhood diarrhea. This has been attributed to increased publicity surrounding cholera. The impact of generally broad cholera messages is obvious in terms of morbidity rates; however, more targeted messages may be more effective in lowering mortality.

Integrating Cholera into CDD Programs: As with many countries in the region, Honduras is integrating CDD programs as part of government policy. However, there is a concern that CDD programs traditionally have not attracted the attention that cholera programs have. In Honduras, cholera management has been separate from the MOH and usually managed at the level of the presidency, which has helped maintain the disease's high level of public visibility. Integrating cholera programs into CDD programs, however, runs the risk of lowering cholera's profile to the traditional level of diarrheal disease control, rather than raising the visibility of all diarrheal diseases to the level cholera sustained during the initial emergency. Efforts therefore should be made to ensure that integration elevates both cholera and other diarrheal diseases to the level of public visibility that cholera received during the emergency stage of the epidemic.

4 CHOLERA IN ECUADOR

4.1 Incidence

Cholera entered Ecuador in March 1991, two months after its South American debut in Peru. Ecuadorian health officials, in anticipation of its arrival, intensified epidemiological surveillance along its border with Peru, only to see the disease take an end-run approach entering near Machala, along the coast some distance from the border. Although the estimation about where cholera might enter was off the mark, the ferocity of its arrival was not underestimated. By the end of the year, Ecuador had experienced more than 46,000 cases, with 692 resulting in death. Almost 32,000 cases with 208 deaths were reported in 1992, but in 1993, the disease began to decline dramatically, with less than 7,000 cases and 72 deaths occurring. Through the first six months of 1994, Ecuador reported just slightly more than 1,000 cases with 14 deaths. (For comparison purposes, the country's population in 1993 was 11,252,000.)

Through the course of the first three years of the epidemic, data show that 20 cantons—areas where access to safe water and adequate sanitation is limited—generated more than 80 percent of the cases. Although the disease greatly declined in most areas of the country in 1993, epidemiological data now show a pattern of persistence in some regions of the sierra and the coast. Communities in three provinces, Chimborazo, Esmeraldas, and Imbabura, characterized by appreciable densities of indigenous or peri-urban populations without water and adequate sanitation, have been associated with persistent, though small, outbreaks of cholera. Apart from these pockets of resistance, however, the disease seems to have come under control in most of the country.

4.2 Actors in Cholera Control and Prevention

The main player in cholera control activities in Ecuador has been the Ministry of Health (MOH), which is a member of the national cholera committee formed in April 1991. In addition to the MOH, national committee members originally comprised representatives of the Ministry of Defense, Ministry of Education, some local NGOs, PAHO, and UNICEF. USAID joined in early 1992.

In the early months of 1991, the committee leadership was provided by the National Secretary for Information, not the MOH. The selection of leadership was intentional, and was directed at informing the public as quickly and as extensively as possible about the dangers of cholera and how people should protect themselves. Only in 1992, when the government changed following elections, did the MOH assume the leadership position. By that time, however, the incidence of disease had started its decline.

At the outset, PAHO was the most active international member of the national cholera committee, providing guidance and support for epidemiological surveillance, especially in the early warning effort mounted along the Ecuador-Peru border, and in material support for latrinization and safe water. PAHO was also instrumental in assisting in the development of health messages, with UNICEF covering the broadcast costs. After joining the committee in 1992, USAID provided a variety of support, including technical assistance in social communication, water quality issues, case management, research, and material support in

the form of oral rehydration solution (ORS) packets.

4.3 National Cholera Plan

The only national cholera plan available to the assessment team was the one obtained in Washington, D.C., from PAHO. This plan, developed in December 1991, presumably by PAHO, laid out a series of actions that included epidemiological surveillance, laboratory diagnosis, water and sanitation, food hygiene, medical services and case management, social communication, and training. The plan had an estimated budget of US$18.95 million, of which more than 80 percent was proposed for improving water and sanitation infrastructure. Both government officials and PAHO representatives interviewed as part of this assessment were unaware of the existence of the PAHO/Washington plan. The apparent role of this plan was to seek funding from the international community.

The assessment team was unable to locate a national cholera plan in-country. Nonetheless, the principles of the December 1991 plan drafted in Washington are reflected in cholera actions carried out in Ecuador, beginning with three components—social communication, water and sanitation, and epidemiological surveillance—that the committee selected for initial emphasis. These components were maintained as priorities throughout 1991, 1992, and 1993, though other components were added later. The national cholera committee's decision to focus on these three areas indicates a rational decision-making process and one that also retains the spirit of the Washington plan.

Perhaps the reason the team could find no plan in-country was because the national committee decided to use a committee approach instead of following a written plan. At the national level, the committee wrestled with issues as they arose, trying usually to take the fullest advantage of available resources, both domestic and international. As the committee progressively gained knowledge over the first three years of the epidemic, its actions increasingly reflected its awareness of what needed to be done, with the exception of case management, in which costly and inappropriate actions continue to be implemented routinely.

As the epidemic unfolded in 1991, reported cases began to be concentrated in some coastal and sierra provinces. As a result, the national committee decided the best way to deal with the crisis was to form committees in these provinces. Over time, the creation of provincial cholera committees was to prove an effective approach for implementing cholera activities. The decentralization of responsibility allowed provincial committees to respond to local needs as required. This not only increased efficiency, it also laid the groundwork for sustaining improved health service delivery beyond cholera.

Thriving under chaos best describes how activities have been carried out in Ecuador's efforts to attack cholera, leading to some successes, especially the creation of provincial cholera committees. Unlike Guatemala and Honduras, where the experiences of the first couple of years of the epidemic gave way to the development of revised plans and new approaches, Ecuador's decentralized approach has been followed consistently. In 1994, with the reported case rate down to around 145 cases a month, the approach is not one of recasting the cholera plan, but of reassessing priorities. This is being done informally within each plan component by the respective MOH divisions, government agencies, provincial health directorates, and NGOs involved. The national cholera committee has stopped meeting on a regular basis, and is unlikely to meet again until and unless there are renewed outbreaks that suggest the epidemic intensity of 1991 and 1992. At the current incidence rate (about 0.60 per 1,000 population), the MOH feels it is not necessary to treat the disease apart from other

aspects of public health.

In this context, Ecuador's cholera epidemic appears to have driven home the lesson of protecting public health. Government officials now realize that social communication involves more than just the transmission of messages. This understanding stems from epidemiological data that show that during the epidemic, the wide distribution of basic hygiene messages such as hand washing led to a better informed population, but not necessarily to a better educated one that changes its behavior as a result of receiving the information. To bring about behavioral change, many in the MOH now believe social communication must be based on why people practice bad behaviors and on understanding what in their environment compels them to do so. Global messages complemented by specific ones targeted to areas of high risk are now seen as essential elements of social communication, and of any effort to protect public health. Consequently, any future approaches to communication will draw upon improved use of epidemiological information that will include cholera as one component of a broader health education effort. A concern remains, however, that follow-up and supervision, historically weak, need to be improved and sustained. To better understand this change and others that have evolved through Ecuador's cholera epidemic experience, a review of each of the plan components is helpful.

4.4 Review of Plan Components

4.4.1 Epidemiological Surveillance

This has been the most successful component. At the outset, however, the MOH was unprepared to conduct adequate epidemiological work. Before the vibrio reached Ecuador, PAHO worked closely with MOH epidemiology personnel to strengthen surveillance along the Peru border and coastal provinces. Alas, the disease entered at a point other than where they were preparing to intercept it, but nonetheless, surveillance mechanisms were being improved.

The cholera crisis led to the development of an improved health information system in Ecuador. In addition to a monthly report that was produced before the cholera outbreak, the system now produces a weekly report that provides updates on cholera and 11 other diseases. Data reporting and analysis skills have likewise improved. Initially, the epidemiological approach was unfocused and global, but with experience, it targeted peri-urban and rural areas that were exhibiting higher and more persistent incidence rates.

One outcome of better data and improved reporting has been the establishment of a relationship between small outbreaks and traditional or folkloric festivals, although the nature of the relationship remains unclear. Analyses have identified 10 high-risk cantons, divided between the sierra and coastal peri-urban areas, where cholera is persistent.

Epidemiological training has been, and continues to be, provided through an agreement with France and the European Community (EC). This project, called the French-Ecuadorian Project for the Control of Diarrheal Diseases and Cholera, which will last three more years, seeks to improve epidemiological surveillance of diarrheal diseases and cholera and, over the long term, other infectious diseases. This project is important because technical capacity in Ecuador remains weak, especially outside of Quito, where little data analysis capability exists. The key element here is supervision of staff at lower levels, as effective supervision at provincial and health area levels is still absent. The French-Ecuador project is directed at improving both technical skills and supervisory skills so that Ecuador's epidemiological system works effectively and efficiently.

4.4.2 Laboratory Diagnosis

The reference laboratory in Quito is fully operational and is able to carry out diagnosis work on diarrheal diseases and cholera; the lab in Guayaquil, through assistance from the French-Ecuador project, will soon have the same range of capability. As noted above, little capacity existed at the epidemic's outset to test for the cholera vibrio. A technician from Guayaquil had recently received training in Japan when cholera broke out in 1991; however, the appropriate reagents were unavailable. PAHO provided these, and stocked other labs as well. Additionally, PAHO and CDC provided training to lab technicians around the country.

4.4.3 Water and Sanitation

Despite the lack of specific national goals for this component (although there are specified objectives in the Washington plan), it achieved considerable success. Two significant achievements stand out: sanitary education and safe water. Latrinization was a central feature for which PAHO and USAID provided significant financial support (more than US$1.5 million combined). The approach adopted was to put sanitary education ahead of construction, an idea that originated with the Minister of Health and that was put into practice by CARE. The results were impressive. Basic sanitary education complemented by a latrine was well received in rural communities and led to a usage rate in provinces such as Chimborazo of 80 percent. CARE's contributions to basic sanitation coverage were, in 1991, 1,584 latrines constructed in 11 communities in 2 provinces; in 1992, 18,345 units in 304 communities in 8 provinces; and in 1993, 24,168 units in 410 communities in 12 provinces. Other agencies also built latrines in rural and peri-urban areas, but the assessment team was unable to locate a total number constructed. In 1990, rural sanitation coverage in Ecuador was about 42 percent; urban coverage was better at 82 percent. These cholera efforts probably improved the coverage levels slightly, but figures to support this assumption were unavailable to the team.

Early efforts to step up latrine construction did lead to some duplication of effort. (Cases have been reported where up to three latrines have been built for one home compound, with none of them being used.) The problem was that little coordination of effort existed at the outset, especially among NGOs that often work in an area independent of government influence or concurrence. The cholera experience, however, has necessitated that the MOH step in and provide some coordination.

In 1992, the MOH created the Office of International Relations, which coordinates the activities of international agencies or groups in the health sector. Any external group wishing to work in Ecuador's health sector is expected to obtain the MOH's approval before it can begin work. The arrangement breaks down when an agency perceives its primary work to be in some other sector, say education, but also is active in the health sector. However, there has been improvement in coordination since this office was formed. Improvement has also come about as a result of better coordination at the provincial committee level.

Rural areas receive assistance for latrine construction from Ecuador's Social Investment Fund (FISE), largely supported by the InterAmerican Development Bank (IDB) and the World Bank. As in other countries, however, there has been little coordination between the latrine construction work FISE is involved in and national cholera plans or strategies.

Safe water is a term that is coming into common usage by MOH personnel to mean water of quality that protects health, while potable water is increasingly interpreted to mean water that is piped to a more convenient location, for example, inside or near the home. As part of

its safe water campaign, the MOH is trying to stress the use of chlorine as the last line of defense in high-risk peri-urban and rural areas where institutionally provided water (that is, water systems that can be treated and managed by trained people) is unavailable. The private sector is playing a role. Colgate-Palmolive, for example, is providing chlorine for distribution in remote and peri-urban areas, and provides some promotional materials as well.

The private sector's contributions notwithstanding, the MOH lacks the resources and technical know-how required to make safe water a reality in high-risk areas. For example, MOH officials say that among indigenous groups in the sierra, soap and chlorine bleach are not commonly used for laundry, nor is soap, in many instances, used for personal hygiene. Therefore, these products are not available in local markets. Also, the introduction of safe water is challenged by local customs and behaviors. These factors must be well understood before an intervention can be designed that proposes the use of liquid chlorine, such as bleach. Outside resources would be necessary for the study of behaviors and the design of appropriate promotional efforts and interventions.

Absent from the water and sanitation component have been actions regarding food hygiene and solid waste management issues. Neither of these areas has been addressed in any cholera control and prevention measures implemented in Ecuador since 1991.

4.4.4 Case Management

This component has been the least successful because neither the motivation nor the capacity for good case management existed among medical personnel in Ecuador during the cholera crisis. At the outset, no one had training in dealing with cholera. Moreover, because cases occurred overwhelmingly in adults, the use of intravenous fluid became the treatment of choice and, unfortunately, remains so. ORS was deemed unacceptable for cholera treatment when the epidemic first broke out, and only after training and some experience with it were gained did ORS come into use. Nonetheless, confidence in ORS remains low within Ecuador's medical community.

Reliance on intravenous fluid during the crisis increased the cost of case management significantly; for intravenous solution alone, the MOH had to foot a bill in excess of US$500,000. However, some high points are noteworthy. Two visits by technicians from Bangladesh representatives of the International Center for Diarrheal Disease Research, arranged through USAID, were well received and are credited with providing some immediate and very helpful guidance to clinical staff. Also, improvement has been made in the prescription of antibiotics. Overprescription had become a problem and resistance to antibiotics was being recorded because of the abuse. Now, both kind and dosage are better understood and are properly prescribed. Abuse continues, however, in the overuse of intravenous solution and the prescription of sodium electrolytes to treat cramps. Overall, more training and capacity building are needed at the health unit level.

4.4.5 Social Communication and Training

Success in this component was reflected in the high level of cooperation among PAHO, UNICEF, the MOH, the Ecuadorian Association of Radio Broadcasters (AER), and USAID In 1991 and 1992, PAHO provided funding (through a regional IDB grant) for development of radio and television spots, as well as print materials. UNICEF disseminated these materials, and AER provided air time for the spots. Other cholera training was provided by PAHO, and by USAID through WASH Project. The MOH claims it has a budget to continue some of these efforts. Follow-up is widely recognized as the weak link

in sustaining these actions.

In 1993, HEALTHCOM (the Communications for Health Project) developed a new strategy for mass media campaigns that moved the MOH away from behavioral instruction to motivation. HEALTHCOM research found that the cholera pathogen frightened people more than any other disease, including AIDS. HEALTHCOM's work impressed upon MOH personnel the importance of developing social communication messages based on data about at-risk population behaviors and beliefs, and the interpretation of that data. When messages are based on how affected groups view the world, the messages stand a greater chance of changing behavior.

An evaluation of HEALTHCOM's work had not been completed by the time of this assessment, and no hard evidence exists yet that there is an association between any reduction in incidence and HEALTHCOM's communications approach. Nonetheless, the methodology has struck a cord. Like the CARE sanitary education that preceded latrine construction, focused social communications are now accepted as the most effective way to implement health services.

4.4.6 Logistics

The assessment team found that no rational basis was used to distribute medical supplies to specific Ecuadorian provinces during the cholera epidemic. Instead, initial distributions were approximations. Later efforts, however, did reflect disease incidence levels. Management was performed ad hoc at the national level; only the provincial cholera committees used logistics components in their approach to attacking cholera.

4.5 The Plan and External Assistance

A summary of national expenditures on direct cholera costs in Ecuador was not available to the assessment team. The only domestic cost that was revealed was the MOH's expenditure of US$500,000 for locally purchased intravenous solution. That and other resources used to attack cholera are summarized below (see Appendix B for a more specific breakdown of assistance provided by international donors).

- GOE/MOH US$500,000 (for intravenous solution),
- PAHO US$792,013,
- AID US$2,457,024, and
- EC US$2,400,000 (2 million ECUs).

All assistance received, including that from USAID, appears to have been well utilized for the most part. With the exception of ORS packets, which were underutilized, and intravenous solution, which was overutilized, material and technical assistance was well programmed and consistent with the spirit of a national plan component by component.

4.6 Lessons Learned

Although the PAHO/Washington national cholera plan was not implemented in Ecuador, it did serve to establish the core principles for the national cholera committee's strategy. The utility of the PAHO plan was obvious in that it provided a general direction for cholera activities. Its usefulness was further apparent in the actions that were implemented. The provincial cholera control committees, which were formed at the urging of the national cholera committee, developed components based on the *Manual of Norms and Procedures*, first published by the MOH in March 1992. The manual provides basic guidance in epidemiological surveillance, laboratory diagnosis, water and sanitation, and social communication—all the elements of a sound plan. Direction in other areas had to be handled verbally from the MOH in Quito, or

were developed locally by the provincial committees based on need.

Actions were carried out in an increasingly rational fashion as experience was gained both at the national and provincial levels. In the very early stages of the disease, the national cholera committee emphasized epidemiological surveillance, social communications, and water and sanitation. As time went by, more actions were added, eventually giving rise to the appearance that a plan with multiple components was being carried out.

Specific lessons the Ecuadorian experience with cholera reveals are addressed below.

Decentralization of Cholera Activities: One of the most important lessons learned in Ecuador came from the formation of provincial cholera committees. The cholera epidemic provided the impetus for the creation of these bodies, and they responded very effectively to the responsibility given them. Provincial health directors were quick to realize the potential the committees had for bringing together complementary resources and forces. Groups that alone were limited pooled their resources with other groups to accomplish much more than they could independently. These committees have now been renamed as provincial health committees with an agenda that spans all public health issues, not just cholera. If continuing support can be extended to these committees, they have a good chance of being sustained and of contributing to the larger public health well into the future.

Social Communication: The experience in Ecuador shows that interventions must be understood by, and be compatible with the cultural characteristics of, the targeted population. In Ecuador, there was an acknowledgment that in order to be effective, educational campaigns first had to motivate and sensitize people at the macro level, and later focus actions and treatment at the micro level, especially among at-risk groups.

Safe Water: Strategists in Ecuador recognized the importance of safe water and the opportunity it creates for establishing household disinfection as the last line of defense against waterborne diarrheal diseases.

Hygiene Education and Infrastructure: The latrinization program demonstrated the value of having the educational component precede the construction component.

Follow-up: Unfortunately, Ecuador's achievements are unlikely to be sustained, especially those related to behavioral changes in at-risk populations, unless actions already implemented are followed up. Follow-up is essential to support actions such as the following:

- The use of ORS, which was poor throughout the epidemic;
- Chlorine use at the household level, which has yet to take hold; and
- Hygiene behavioral changes observed with the use of latrines.

The MOH should support follow-up activities as part of its ongoing public health policy. Carrying out these kinds of activities should be a core responsibility of the MOH in normal times as well as during times of emergency.

5 CONCLUSIONS

5.1 National Cholera Plans

This report highlights the national cholera programs in 3 of the 20 countries in the region affected by the disease—Guatemala, Honduras, and Ecuador. Certainly, no generalizations can be drawn from a sample of three. Nonetheless, this review presents some idea of how useful national cholera plans were in guiding and focusing actions in the region. The findings are indicative of what has gone right and what remains wrong with the approaches to cholera prevention and control in these three countries.

5.1.1 Approaches to Implementing Cholera Activities

How governments implemented the plans varied widely. Honduras's approach was the most consistent and, of the three, was the only written plan actively put into practice. The central government developed a national plan that was then passed on to regional and area health officials, who in turn drafted local plans. The approach was originally intended to be decentralized. Once regional and health areas were organized with their own plans, decision-making and implementation would occur independently of the central government. Only health information and requests for backup logistics support would directly involve central authorities. However, once the low incidence rate in Honduras attracted political attention, the approach became more centralized as the presidency weighed in both to take credit for the low rate and to try to ensure that it would remain low.

In Guatemala, a written plan exists, drafted in 1991 and updated in 1993, but the assessment team was unable to determine whether the plan had been implemented at any level of the health services system. After preparing a national plan, Guatemala's Ministry of Health (MOH) sent it to provincial directorates (health areas), which were expected to ratify or draft their own plan based on the central plan. What the directorates actually did remains unclear.

In Ecuador, a written plan drafted in 1991 in Washington, D.C., by PAHO, was used to seek funding from the international community. Locally, no written plan was followed. Instead, the national cholera committee adopted a strategy that emphasized three areas of action: social communication, water and sanitation, and epidemiological surveillance. This approach was carried to affected provinces, where committees were formed to address these three areas.

5.1.2 Measuring the Appropriateness of Responses to the Epidemic

Experience with cholera programs in the hemisphere since 1991 shows that most plans or strategies contain seven core areas—epidemiological surveillance, laboratory diagnosis, water and sanitation, food hygiene, case management, social communication and education, and logistics. The Environmental Health Project (EHP) and Basic Support for Institutionalizing Child Survival (BASICS) Project decided, therefore, that the criterion for determining the appropriateness of a cholera response would be this set of seven key areas. A

plan or strategy that met this criterion would be considered an appropriate response.

Although Guatemala developed a plan in 1991 that addressed most of the core areas, it was not implemented. Epidemiological surveillance and data reporting there have been highly suspect, and most of the other components in the plan were also found to have been poorly implemented. A 1993 revision of Guatemala's national plan addresses weaknesses in the 1991 version, but even this improved plan has not been implemented to date. The ambiguity surrounding plan implementation in the country is underscored by the fact that case management, which was not formally included in Guatemala's written plan, accounted for a large share of the dollar value of external assistance, an inconsistency that suggests that some independent decision-making was taking place somewhere.

In Honduras, the 1991 plan was consistent with the seven core areas and was implemented in a consistent fashion.

In Ecuador, a written plan was used only for funding, but the reviewers think the plan helped establish the spirit of a decentralized national cholera committee strategy that embraced three important core areas at the outset of the crisis, and that expanded to include others as deemed necessary at the provincial level.

5.1.3 Effectiveness of Cholera Plan Components

The national cholera plans worked well where they were written and followed. In Honduras, the development and implementation of a plan enhanced the government's credibility to combat the disease. In Ecuador, one of the largest recipients of combined external assistance at more than US$5 million, the absence of a plan did not hamper the implementation of a coherent strategy. Guatemala, despite having a plan, has not fared well in its struggle to confront the disease.

In terms of the seven key plan components noted above, Honduras and Ecuador shared some versions of all seven. The Guatemala plan failed to include formally case management or logistics among its components, which is mystifying, given that most of the external assistance the country received was used to provide case management supplies. One thought for this omission is that case management was actually taken for granted by the MOH plan preparers, given the hospital infrastructure that exists in Guatemala. Following this logic, it would be unnecessary to plan for something that would receive preferential treatment anyway. Another explanation would be that none of the principal external support agencies (ESAs), such as PAHO, UNICEF, and USAID, were involved in the plan's final preparation, because any one of them would have noted the omission.

Table 1 summarizes the plan components by country and their level of effectiveness as reported by program officials.

Table 1

Effectiveness of Plan Components

	Epid. Surv.	Lab. Diagnosis	W&S	Case Mgmt.	Soc. Comm.	Food Hygiene	Logistics
Guatemala	*	*	*	nc	*	***	nc
Honduras	**	**	*	*	**	**	***
Ecuador	***	*	***	*	***	*	*

Key:
* = weak
** = average
*** = very effective
NC = no component

The score of component effectiveness is a subjective measure based on the degree of emphasis the national cholera committees placed on the components, or on how well the components were managed in the opinion of program officials whom the team interviewed.

Having a plan did not ensure more effective component implementation. In Honduras, where a written plan was followed, water and sanitation and case management were weak. In the former, water service coverage, water quality monitoring, and basic sanitation coverage fell short, while in case management, efforts suffered from a lack of follow-up. Regarding the other components, however, the assessment team observed a fairly tight fit between what was said and what was done. Honduras's accomplishments in the other five components were either average—meaning they were somewhat effective in their outcome—or were very effective. Logistics component achievements were consistent with plan targets and food hygiene targets were well addressed under plan implementation. Social communication targets were also addressed as specified in the plan, although these efforts were not based on epidemiological data as they should have been. Ecuador, which had no written plan, was effective in three areas it targeted: epidemiological surveillance, water and sanitation, and social communication. A noted failure, however, occurred in case management, which was neither emphasized nor addressed by the country's national and provincial committees.

In Guatemala, plan targets were not kept in focus as the plan was being implemented. For example, much of the work carried out in the water and sanitation sector occurred outside of the plan. Only the food hygiene component was implemented effectively, and then only because of a highly motivated person in charge in Guatemala City.

5.1.4 Use of Assistance from External Sources

Table 2 details the total assistance the major external agencies provided to Guatemala, Honduras, and Ecuador in the countries' attempts to fight the epidemic. The table also offers a breakdown of how the funds were used in-country by project component.

Table 2

Use of External Assistance

Country	US$ Amount	Epid. Surv.	Lab. Diatg.	W&S	Case Mgmt.	Soc. Comm.	Food Hygiene	Logistics	Total
Guatemala	$2,391,038[1]	9%	10%	10%	56%	6%	4%	4%	100%
Honduras	$1,677,954[2]	8%	5%	21%	51%	6%	6%	3%	100%
Ecuador	$5,649,037[3]	46%	1%	30%	6%	18%	1%	0%	100%

[1] PAHO= US$891,024; USAID= US$1,500,014
[2] PAHO= US$561,444; USAID= US$1,116,510
[3] PAHO= US$792,013; EC= US$2,400,000; USAID= US$2,457,024

Note: Figures are rounded and therefore may not equal 100%.

The assessment team made some subjective decisions in preparing Table 2. The information available from the ESAs was not neatly packaged by component. To come up with such a breakdown, the team used the summary data for each country presented in Appendix B. For example, in the case of Guatemala, support from Sweden through PAHO provided $413,240 for various actions in support of epidemiological surveillance, lab diagnosis, case management, and water protection. The team decided to divide this total amount into thirds, assigning a third each ($137,746) to epidemiological surveillance and to lab diagnosis; because the team found out little about case management and water protection, the final third was divided between these two components at $68,873 each. The same kind of approach was applied to each country in which only total figures were available.

In the case of Ecuador, the French-Ecuador project posed a somewhat different problem. This project is being financed with US$2.4 million from the European Community. The French team implementing the project takes a position that these funds should not be considered cholera assistance funds because the project purpose goes way beyond cholera to include virtually all infectious diseases in the country. However, the team decided to include the total here because, for purposes of this paper, the French-Ecuador project is a response to the cholera epidemic. It is doubtful this amount or kind of assistance would have been provided by the European Community had cholera not revealed how weak epidemiology skills were in Ecuador.

While far from perfect, this approach to presenting ESA assistance data provides some indication of the spending trends being followed in each country. In Ecuador, for example, interviewees talked about achievements, especially the lessons learned, in water and sanitation, social communication, and in improved epidemiological surveillance. These achievements track closely with what was emphasized in the strategy Ecuador's national committee followed, and with how much was spent on them. The team found that while little of the ESA support given to Ecuador was used for case management, almost all the domestic support was, which remains an issue.

Most external support in the three countries to date has come from PAHO (specific country

support through PAHO from Sweden and Holland), USAID, the InterAmerican Development Bank (through PAHO), and the European Community.[3] Use of the assistance has been consistent with the components of the plans in Guatemala and Honduras, and consistent with targeted actions in Ecuador. It was unclear whether decisions about external support were based on plan targets, or whether their apparent fit with plan targets was merely coincidental.

In Guatemala, the manner in which ESA assistance was used reflects the poor implementation of the 1991 plan. Fifty-six percent of ESA support went to case management, which, as noted earlier, was not formally included in the plan. Other components included in Guatemala's plan, such as epidemiological surveillance and social communication, were given little emphasis. Guatemala's 1991 plan had an estimated budget of US$10,363,000 of which 23 percent was for epidemiological surveillance, 11 percent for laboratory diagnosis, 35 percent for water and sanitation, 19 percent for food hygiene, and 12 percent for training and evaluation. The results presented in Table 2 suggest that the plan was neither followed nor emphasized. The lack of any notable cholera activities is the result of a planning process that was not followed through. The country's steady increase in reported cholera cases, even after four years of experience, may also stem from Guatemala's failure to follow its national plan.

While the distribution of ESA support in Honduras resembles that in Guatemala, the difference lies in the purposefulness of implementation in the former. Honduras's expenditures were consistent with its plan. Likewise, its spending weaknesses were also consistent with the plan (for example, case management in the form of heavy investment in oral rehydration solution and intravenous materials, while social communication and other technical assistance were lacking).

An accounting of domestic expenditures by component was not available from any of the countries.

5.2 Conclusions, Lessons Learned, and Recommendations

5.2.1 Conclusions

The following table presents the population of each of the three countries studied from 1991 to 1993, along with reported cholera cases, incidence rate per 1,000 population, and case fatality ratio (CFR).[4]

[3]USAID missions requesting assistance from the regional cholera program were required to indicate whether assistance fit within the national committee plans and whether it was coordinated with other donors.

[4] The number of cases is reported using clinical diagnoses, not lab diagnoses, so CFRs must be interpreted with caution. However, consistent use across countries makes CFRs a reasonable basis for comparison.

Table 3

Population, Number of Reported Cases, and Cholera Incidence, 1991-1993

Country/Rates	1991	1992	1993
Guatemala			
Population	9,266,000	9,498,000	9,735,000
No. of cases	3,674	15,395	30,604
Rate/1,000	0.40	1.62	3.14
CFR %	1.40	1.30	1.00
Honduras			
Population	4,949,000	5,093,000	5,240,000
No. of cases	11	384	2,690
Rate/1,000	0.002	0.08	0.51
CFR %	0	4.40	2.57
Ecuador			
Population	10,752,000	10,999,000	11,252,000
No. of cases	46,320	31,870	6,833
Rate/1,000	4.3	2.9	0.60
CFR %	1.5	0.65	1.05

Source: PAHO

Guatemala clearly has had the worst performance of the three countries. It may only be coincidence that Guatemala's incidence rate seems to reflect the weakness of its cholera strategy, just as much as Honduras's seems to reflect the strength of its plan. Admittedly, it is inviting to speculate that the more consistent approaches observed in Ecuador and Honduras might have played some role in the trends those countries have experienced.

The three countries approached the development and implementation of cholera actions quite differently. While Guatemala and Honduras both had prepared plans, only Honduras followed through from the national level down to the local level. It is interesting to note that in Honduras the incidence of disease was low, which may have been related to having and implementing a good plan. On the other hand, while morbidity was kept low, the case fatality rate of greater than 2 percent in 1992 and 1993 was among the highest in the region. Meanwhile, Ecuador's committee approach proved very effective in mobilizing resources. The provincial committees were asked to implement local strategies patterned after the national strategy. Especially effective was the water and sanitation component, one of the largest in the national strategy. By giving provincial committees responsibility for coordinating activities at their level, the national committee allowed provincial-level agencies and nongovernmental organizations (NGOs) to leverage their resources and achieve more than they could have alone. The experience has encouraged Ecuador's MOH to retain the provincial committees and to rename them "provincial health committees" with expanded agendas that include all public health issues.

Ecuador's weakness in implementing its national cholera strategy, as Table 3 implies, was case management. In 1991, Ecuador had a CFR of 1.5. It dipped to 0.65 in 1992, but rose again in 1993 to 1.05, despite a declining incidence rate over the same period. While the decline in incidence may have been influenced by national and provincial committee efforts in social communication and

water and sanitation, the CFR was very likely the result of poor case management. Only 6 percent of ESA support went for case management in Ecuador. It is arguable that had more technical assistance been provided—of the type contributed by the International Center for Diarrheal Disease Research-Bangladesh (ICDDRB) technicians—Ecuador's CFR trend would have paralleled its decline in incidence.

5.2.2 Lessons Learned from the National Cholera Plans

Good Planning: In all three countries studied, the development of a national cholera plan served the important function of getting authorities to focus on the crisis and to think about strategies for dealing with it. Even in Ecuador, where a written plan was used only for funding purposes, the principles and spirit of a plan were incorporated in the decentralized committee approach that was followed. In Guatemala, a poorly implemented plan drafted in 1991 provided a starting point for a 1993 government commission that evaluated cholera activities and that produced a revised plan. In Honduras, a fully implemented plan was updated in 1994 to conform to the agenda of a new national government, and to integration into the Control of Diarrheal Diseases (CDD) program.

Working without a Plan: A successful country cholera program does not depend on a plan. In Ecuador, where no written plan was followed, a successful set of actions flowed from a decentralized committee approach.

Proper Social Communication: Interventions must be understood by, and be compatible with the cultural characteristics of, the target population. In Ecuador, officials acknowledged that in order to be effective, educational campaigns first had to motivate and sensitize people at the macro level, and later focus actions and treatment at the micro level, especially toward at-risk groups. Also, as shown in Ecuador, latrinization programs can benefit from having the educational component precede construction. In Honduras, social communication about cholera is credited with a decline in the incidence of childhood diarrheal disease.

Decentralization of Cholera Activities: In Ecuador, the cholera epidemic provided the impetus for the creation of provincial committees, which responded very effectively by coordinating cholera activities appropriate for their jurisdictions. By pooling resources, groups were able to accomplish much more than they could have independently. In Honduras, local involvement in the plan was undermined when cholera became politicized and attracted heavy presidential involvement.

Sectoral Coordination: In many Latin American countries, social investment fund (FIS) programs have been started. These programs have become heavily involved in latrinization and water projects, but usually are not well coordinated with other efforts in the water and sanitation sector, nor with national cholera plans. Key problems with these programs are their lack of hygiene education and the absence of attention to economic sustainability in the form of community participation and cost recovery.

Safe Water: The term "safe water" is increasingly being used to describe water that is bacteriologically safe. The term opens up opportunities for addressing water quality monitoring issues, and for promoting household-level disinfection as the last line of defense against cholera and diarrheal disease.

Technical Assistance: Ecuador's experience demonstrates the effectiveness of technical assistance. By drawing extensively on ESA-supported technical assistance in social communication, Ecuador produced a variety of messages directed at the macro and micro levels that many MOH officials say were responsible for raising social awareness and reducing disease incidence. However, almost no technical assistance was brought in to strengthen case management skills, and Ecuador's CFR remained

almost unchanged from 1991 to 1993.

Follow-up: Unless actions that have been implemented are consistently reinforced, achievements made in attacking and preventing cholera are unlikely to be sustained, especially those related to behavioral changes among at-risk populations.

5.2.3 Recommendations

Based on the experiences in Guatemala, Honduras, and Ecuador, the team makes the following general recommendations regarding planning and implementing cholera programs.

1. USAID should continue providing assistance within the context of national cholera plans.

2. The channeling of FIS resources should be encouraged within the context of national cholera plans.

3. Safe water messages and practices should be promoted to households that are unserviced by piped water.

4. Health messages should be based on epidemiological investigations and high-risk behaviors, and should be targeted appropriately.

5. Case management should be standardized and improved through new training and supervision strategies.

REFERENCES

Comision Ministerial, Ministerio de Salud Publica y Asistencia Social de la Republica de Guatemala. November 1993. Plan de Atencion al Colera en Guatemala. Guatemala City, Guatemala.

Ministerio de Salud Publica. April 1994. Plan Nacional de Prevencion y Control de Enfermedades Diarreicas y Colera 1994-1995. Tegucigalpa, Honduras.

Ministerio de Salud Publica. February 1991. Plan de Prevencion y Control del Colera. Tegucigalpa, Honduras.

Ministerio de Salud Publica y Asistencia Social de la Republica de Guatemala. October 1993. Plan de Prevencion y Control para la Epidemia del Colera. Guatemala City, Guatemala.

Pan American Health Organization. June 1994. Cholera Situation in the Americas. Update Number 10. Expanded Program for the Control of Diarrheal Diseases. Washington, D.C.: PAHO.

Pan American Health Organization. 1991-1993. Cholera Situation in the Americas. Reported cases by country and year. Update Number 9. Sanitary Bureau Regional Office. Washington, D.C.: PAHO.

Pan American Health Organization. 1992. PAHO at Work Today: The Case of Cholera. Washington, D.C.: PAHO. 26(4) : 293-300.

Appendix A

Persons Contacted

Guatemala

Dr. Enrique Duarte, Vice-Minister, Ministry of Health (MOH)

Dr. Fransisco Ardón, General Coordinator, National Cholera Committee

Ing. Guillermo Garcia Ovalle, Chief, Environmental Sanitation Division, MOH

Dr. Dannys Cifuentes, Chief, Department of Registry and Food Control, MOH

Dr. Jacabo Finkelman, PAHO Country Representative

Dr. Carlos Andrate, UNICEF Health Advisor

Mr. Gary Cook, USAID, Health and Education Office Director

Dr. Jorge Chang, USAID Clapp & Mayne Project Officer

Dr. Victor Lara, Clapp & Mayne, Inc. - Guatemala

Ing. Ana Lucía Obiols, CARE

Ing. Mauricio Pardón, PAHO Environmental Health Advisor

Dr. Miguel Machuca, PAHO Country Epidemiologist

Dr. Paul Chinchilla, Social Security Institute (IGSS) Epidemiologist

Mr. Steve Maber, Coordinator, Regional Water and Sanitation Network

Ing. Ricardo Rojas, Program Specialist, Regional Water and Sanitation Network

Mr. Juan Diego Bonilla, General Manager, Chlorine "Magia Blanca"

Dr. Junio Robles, Chief, Technology Transfer Division, INCAP

Honduras

Dr. Enrique Zelaya, Director General, At-Risk Populations, Ministry of Health (MOH),and Coordinator of the National Cholera Committee

Dr. Alejandro Melara, Director General, Environmental Health Division, MOH

Dr. Alirio Cruz, Former National Cholera Committee Coordinator

Dr. Godofredo Andino, Director, Disaster Unit, MOH

Ing. Mario Ruiz Funez, Coordinator, Environmental Health and Water Quality, MOH

Ing. Marta Elena Raudales, Department of Design Studies, MOH

Sra. Margarita Calix, Health Region Seven Director

Sra. Tanya Olivara, Health Region Seven Chief for Environmental Health

Sra. Mirta Escobar, Health Region Seven Supervisor for Food Control

Sra. Eda Safía Calix, Health Region Seven Epidemiologist

Lic. Roberto Montes, Health Region Seven Microbiologist

Dr. Marvin Andrés Maldonado, Campamento Health Unit Chief Officer

Sr. Leonel Torres, Campamento Health Unit Health Promoter

Dr. Luis Roberto Escoto, UNICEF Project Officer for Health and Nutrition

Dr. César Hermida B., PAHO Country Representative

Dr. Sylvia Robles, PAHO Country Epidemiologist

Dr. Jose Ochoa, PAHO National Maternal and Child Health Advisor

Ms. Elena Brineman, USAID Deputy Director

Dr. David Losk, USAID Office of Health Director

Dr. Stan Terrel, USAID Child Survival Advisor

Mr. Herb Caudill, USAID TAACS Advisor

Ing. Arnoldo Caraccioli, Director, Honduran Social Investment Fund (FHIS)

Ing. Roberto Rivera, FHIS Chief of Education

Ing. César Salgado, FHIS Chief of Water Projects

Ecuador

Leo Roozendaal, CARE

Dr. Silvie Briand, French-Ecuador Project

Dr. Efran Pacheco, Director General, Ministry of Health (MOH)

Dr. Alberto Narvaez, Chief of Epidemiology, MOH

Lcda. Lidia Garcia, Department of Epidemiology, MOH

Lcda. Ynes Yepez, Department of Health Communications, MOH

Lic. Victor Ortega, Department of Social Communication, MOH

Lic. Eduardo Salazar, Department of Social Communication, MOH

Dr. Rodrigo Paredes, Director, Province of Cotopoxi, MOH

Dr. Fabian Enriquez, Director, Province of Chimborazo, MOH

Dr. Ana Burgos, Director, Osvedo Hospital

Dr. Mario Valcarcel, PAHO, Quito

Dr. Carmen Laspina, Department of Public Promotion and Protection, MOH

Dr. Adela Vimos, Chief of Epidemiology, Chimborazo, MOH

Lic. Luis Sangoquiza, Health Educator, Chimborazo

Sra. Mercedes Molina, Promoter, CARE/Chimborazo

Ing. Ivan Palacios, Coordinator, CARE/Chimborazo

Appendix B

External Support for National Cholera Activities

1992-1994

GUATEMALA: External Support for National Cholera Activities, 1992 - 1994

Source/Project		Activity		Funds	Status	Date
PAHO Support for national cholera activities, 1992-94						
Sweden (SIDA)		Technical Cooperation, training, field research, supplies and equipment to support epidemiological surveillance, lab diagnosis, case management and protection of water		$413,240	in prog.	12-31-94 (completion date)
Netherlands		Information/Education/Communications (Local level social communication; with MOH)		$102,152	in prog.	9-30-94 (completion date)
GUT-CDD-020		GUT-CDD-020 - Misc. expenses: staff contracts, travel related to TA		$29,083	completed	
OPEC		Support for Emergency Phase, including:			in prog.	12-31-94 (completion date)
	$8,000	-Update cholera emergency plans, publish guides				
	$4,000	-Follow-up training to food-handlers in 8 high-risk districts				
	$18,000	-Epidemiological surveillance of high-risk groups (migration)				
		-24 HIS courses for health personnel				
			Total budgeted	$90,000		
Inter-American Development Bank (IDB)						
	$66,200	Strengthening Epidemiological Surveillance				
	$45,765	Laboratory Strengthening				
	$94,584	Environmental Health & Food Protection				
			Total Authorized Funds	$206,549		
Director's Emergency Cholera Fund: for Environmental Health				$50,000	approved	1-1-94
			Total through PAHO	$891,024		
USAID support for national cholera activities, 1992-94						
ORS Supply						
	$217,386	ORS Packets: 1,417,500			Completed	6-15-92
	$229,040	ORS Packets: 1,600,000			Completed	5-18-93
			Total	$446,426		
Public Health Supplies						
	$80,000	IV Solutions			Completed	2-20-92
	$79,624	Cholera Supply			In prog.	2-20-92
			Total	$159,624		
PRITECH						
	$7,404	Technical Assistance to CARE			Completed	9-18-92
	$7,054	Evaluation of CARE Emergency Project			In prog.	4-21-92
	$66,650	CHW Training and ORS Logistics			In prog.	7-13-93
			Total	$81,108		
Quality Assurance	$66,367	QA Project Country Plan			Completed	3-3-92
			Total	$66,367		
WASH						
	$38,500	Technical Assistance to CARE			Completed	11-19-92
	$0	Technical Assistance on Sewerage			On hold	2-14-92
	$21,500	Follow-up TA to CARE			Completed	6-4-93
			Total	$60,000		
ADDR	$1,000	Cholera Surveillance in Shigella Study			In prog.	2-18-92
			Total	$1,000		
CDC	?*	FDA: TA to Govt. of Guatemala			Completed	1-19-93
	?*	Epidemiologist TA			Planning	1-4-93
			Total	$0		
HealthCom	$0	TA in Health Communications			On hold	8-10-92
			Total	$0		
Mission						
	$155,000	Procurement: One million ORS packets			In prog.	3-16-92
	$24,000	Education on Cholera prevention at the community level			In prog.	3-16-92
	$30,000	OR intervention in cholera - local health personnel			In prog.	3-16-92
	$38,000	Procurement ORS and pamphlets			In prog.	3-16-92
	$141,783	Strengthen Natl. Cholera Plan Capacity			In prog.	4-16-93
	$114,865	Assistance to LAPROMED			In prog.	4-16-93
	$114,741	Diarrheal Disease Interventions			In prog.	4-16-93
			Total	$618,389		
"Central Funds"		Procurement 500,000 posters		$11,500	In prog.	3-16-92
Regional W&S Network		Technical Support for water supply and sanitation		$55,600		
			Total AID Assistance	$1,500,014		
	Summary:		**PAHO**	$891,024		
			USAID	$1,500,014		
			Total	$2,391,038		

HONDURAS: External Support for National Cholera Activities, 1992 - 1994

Source/Project	Activity	Funds	Status	Date
PAHO Support for national cholera activities, 1992-94				
Sweden (SIDA)	Various activities to support basic hygiene, case management, laboratory diagnosis, and epidemiological surveillance	$273,980	in prog.	12-31-94 (completion date)
Netherlands	Information/Education/Communications	$67,800	completed	9-30-93
OPEC	Support for Emergency Phase, including:	$45,000	in prog.	12-31-94 (completion date)
$16,000	-Purchase and install water disinfection means in 18 high-risk communities			
$4,000	-Four regional workshops training health workers in case management and epidemiological surveillance			
Director's Emergency Cholera Funds: Mosquitia Region	- Health education - Environmental Health - Institutional Strengthening	$126,000		1994
Inter-American Development Bank (IDB)				
$43,532	Strengthening Epidemiological Surveillance			
$0	Laboratory Strengthening			
$5,132	Environmental Health & Food Protection			
	Total Authorized Funds	$48,664		
	Total through PAHO	$561,444		
USAID support for national cholera activities, 1992-94				
Public Health Supplies				
$275,178	PHS Supplies I		In prog.	2-20-92
$59,700	Chlorine, Test Kits, Reagents		In prog.	1-4-93
$11,100	Reagents for Chlorine Tests		In prog.	7-8-92
$13,480	Laboratory Supplies		In prog.	6-4-93
$246,043	Supplies for North Coast Flood		In prog.	12-3-93
$55,322	Antibiotics for North Coast Flood		In prog.	12-6-93
	Total	$660,823		
ORS Supply				
$53,740	375,000 packets		In prog.	7-8-92
$96,732	675,000 packets		In prog.	10-13-93
	Total	$150,472		
CDC				
$8,462	TA in Epidemiology		Completed	2-24-92
0	TA in Epidemiology II		On hold	6-4-92
(indirect)	TA / Laboratory Assessment		Completed	1-19-93
	Total	$8,462		
WASH	$0 Translation of Torrents Report			"PH" 7-7-92
	Total	$0		
Mission				
$160,000	Water Seal Toilets for Emergency Latrinization		In prog.	3-16-92
$15,000	Creation of Mobilization Fund for Chol.		In prog.	3-16-92
$5,000	Training Video for Hospitals		In prog.	3-16-92
$500	RTAC produced posters		In prog.	3-16-92
$60,653	Diarrheal Disease Control and Cholera		In prog.	4-16-93
	Total	$241,153		
Regional W&S Network	Technical Support for water supply and sanitation	$55,600		
	Total AID Assistance	$1,116,510		

Summary:

PAHO	$561,444
USAID	$1,116,510
Total	$1,677,954

ECUADOR: External Support for National Cholera Activities, 1992 - 1994

Source/Project		Activity	Funds	Status	Date
PAHO Support for national cholera activities, 1992-94					
Sweden (SIDA)		Latrinization and Safe Water	$529,000	in progress	6-30-94 (completion date)
Netherlands		Sanitary Education through CAAP for indigenous groups in Sierra	$67,800	completed	8-31-93
IH e.v. & Welthilfe (Belgium) (arranged by WHO)		Prevention & Control of Cholera & other D.D.s (In 1992, $20,000 remained for "environmental health interventions at the local level")	$60,000	in progress	1992
Inter-American Development Bank (IDB)					
	$64,368	Strengthening Epidemiological Surveillance			
	$39,882	Laboratory Strengthening			
	$30,963	Environmental Health & Food Protection			
		Total Authorized Funds	$135,213		
		Total through PAHO	$792,013		
European Community (EC) Support for national cholera activities, 1992-94					
EC		Support to French Ecuador Project	$2,400,000		
		Total through EC	$2,400,000		
USAID support for national cholera activities, 1992-94					
HealthCom					
	$3,082	TA in Communiation Strategy		Completed	2-18-92
	$17,807	Communication Plan Workshop		Completed	9-23-92
	$9,887	Communications Strategy Development		Completed	1-4-93
	$440,466	Communications Campaign		In prog	2-12-93
	$8,694	Machala TA w/WASH		Completed	7-13-93
		TOTAL	$479,936		
ORS Supply					
	$163,136	ORS Packets: 1,000,000		Completed	6-15-92
	$163,117	ORS Packets: 1,000,000		Assignment	3-4-92
		TOTAL	$326,253		
WASH					
	$0	Technical Assistance Request		PH	6-2-92
	$55,472	TA for water systems assessment - chlorine		Completed	6-4-93
	$17,500	Machala: Prep/Strategy Seminar & Wrap-up		In prog	6-4-93
	$30,380	Machala Latrine Design Workshop		Completed	6-4-93
	$35,510	Machala TA in Financial Management		In prog	6-4-93
	$29,200	Machala Pre-feas. Water Management Plan Study		Completed	6-4-93
	$37,500	Machala Control and Prevention Workshop		Completed	7-26-93
	$13,660	Paute River Rapid Env. Assessment		Completed	6-4-93
		TOTAL	$219,222		
ADDR					
	$10,680	TA from ICDDRB in case management		Completed	6-29-92
	$70,000	Research Proposal #1		Planning	1-27-93
	$28,704	Research Proposal #2		Planning	1-27-93
	tbd	IV Lat. Am. Congress of Tropical Medicine		SOW	2-12-93
		TOTAL	$109,384		
Quality Assurance	$75,342	Hermida Technical Assistance		In prog	8-20-93
		TOTAL	$75,342		
PRITECH	"X"	Assessing Drug Use in Treatment of Cholera		Report Writin	2-13-92
		TOTAL	$0		
CDC	"?"	TA from Mintz and Webber		Completed	1-19-93
		TOTAL	$0		
Mission	$100,000	Prep & Dissem of educational materials on cholera		In prog.	3-16-92
	$200,000	Hygiene Education		In prog.	3-16-92
	$20,000	Cholera Prevention Communication		In prog.	3-16-92
	$620,000	Cholera response in affected rural areas - CARE		In prog.	3-16-92
	$306,887	CARE Cholera Response		In prog.	4-16-93
		TOTAL	$1,246,887		
		Total AID Assistance	$2,457,024		

Summary:		
	PAHO	$792,013
	EC	$2,400,000
	USAID	$2,457,024
	Total	$5,649,037

PAHO: Cholera Support from Inter-American Development Bank (IDB)
Approved Funds for Ecuador, Guatemala and Honduras
1992 - June, 1994

Activities Funded:	Ecuador	Guatemala	Honduras
I. Strengthening Epidemiological Surveillance			
Training and Development			
National Seminars	$12,988	$10,947	$25,191
Sub-regional Seminars	$0	$11,388	$0
Regional Seminars	$0	$0	$3,600
Monitoring Epidemiological Information			
National Consultants	$2,659	$15,416	$7,800
International Consultants	$4,058	$1,247	$1,340
Publications			
Regional	$6,000	$927	$0
National	$7,819	$6,147	$1,500
Equipment	$12,000	$8,000	$0
Dissemination of Information to Community			
Audio-Visual, Educ. items	$15,000	$0	$4,100
Printed Materials	$3,844	$11,930	$0
I. TOTAL	**$64,368**	**$66,002**	**$43,531**
II. Laboratory Strengthening			
Diagnosis of Diarrheal Diseases - Lab. Training			
National Consultants	$5,744	$2,000	$0
National Courses/Seminars	$3,928	$8,431	$0
Laboratory Supplies	$2,000	$6,916	$0
Environmental Health Laboratories			
National Courses/Seminars	$5,462	$2,778	$0
Supplies	$4,710	$7,932	$0
Sanitary / Food Protection Laboratories			
National Courses/Seminars	$7,956	$6,000	$0
Supplies	$10,082	$11,708	$0
II. TOTAL	**$39,882**	**$45,765**	**$0**
III. Environmental Health and Food Protection			
Technical Collaboration in Controlling Contamination Levels			
National Consultants	$6,950	$19,556	$5,132
International Consultants	$3,236	$0	$0
Technical Collaboration in Food Protection			
National Consultants	$4,400	$3,000	$0
International Consultants	$0	$0	$0
Training and Development			
National Courses/Seminars	$12,377	$44,480	$0
Dissemination of Information to the Community			
Audio-Visual, Educ. items	$0	$16,731	$0
Printed Materials	$4,000	$10,817	$0
III. TOTAL	**$30,963**	**$94,584**	**$5,132**

	Ecuador	Guatemala	Honduras
Total Funds from IDB:	$135,213	$206,351	$48,663

Guatemala

ESA_$	EPI	LAB	WS&S	CASE	COMM	FOOD_HY	LOGIST	TOTAL
2,391,038	137,746	137,746	14,458	68,873	102,152	4,000	29,083	
	18,000	60,000	60,000	446,426	24,000	94,584	8,000	
	66,200	45,765	55,600	159,624	11,500		66,367	
	1,000		68,873	66,650				
			50,000	155,000				
				30,000				
				38,000				
				141,783				
				114,865				
				114,741				
	222,946	243,511	248,931	1,335,962	137,652	98,584	103,450	2,391,036
	9%	10%	10%	56%	6%	4%	4%	100%

Honduras

ESA_$	EPI	LAB	WS&S	CASE	COMM	FOOD_HY	LOGIST	TOTAL
1,677,954	68,495	68,495	16,000	68,495	67,800	68,495	42,000	0
	25,000	13,480	42,000	4,000	5,000	5,132	15,000	0
	43,532	8,462	59,700	42,000	500	20,217	0	0
	0	0	11,100	275,178	20,217	0	0	0
	0	0	160,000	246,043	0	0	0	0
	0	0	55,600	55,322	0	0	0	0
	0	0	0	150,472	0	0	0	0
	0	0	0	20,219	0	0	0	0
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
	137,027	90,437	344,400	861,729	93,517	93,844	57,000	1,677,954
	8%	5%	21%	51%	6%	6%	3%	100%

Ecuador

ESA_$	EPI	LAB	WS&S	CASE	COMM	FOOD_HY	LOGIST	TOTAL
5,649,037	64,368	39,882	529,000	326,253	67,800	30,963	0	0
	2,400,000	0	219,222	0	60,000	0	0	0
	109,384	0	620,000	0	479,936	0	0	0
	0	0	306,887	0	75,342	0	0	0
	0	0	0	0	100,000	0	0	0
	0	0	0	0	200,000	0	0	0
	0	0	0	0	20,000	0	0	0
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0
	2,573,752	39,882	1,675,109	326,253	1,003,078	30,963	0	5,649,037
	46%	1%	30%	6%	18%	1%	0%	100%