PAHO. Though that did not work out at the time, interest in the training program has remained. The Division of International Health has continued to enjoy good relations with PAHO and with the countries in the region. Since Hurricane Mitch, TEPHINET was able to organize a response in Honduras using staff and trainees from Central and Latin America programs. TEPHNIET members participated in the design of a surveillance system for Honduras. They also fielded a team for a cholera outbreak in El Salvador and assisted in several PAHO sponsored and organized workshops on outbreaks investigations.

COORDINATION

DIH will develop the implementation plan for the FETPs in close collaboration with the Ministries of Health in each and in coordination with PAHO, other donors and agencies. This same consultative approach will be employed in the development of plans for intra-country and regional activities.

CDC will work with the Ministries of Health to develop coordination mechanisms between the FETPs and the Ministries and between host countries and others who will be sending trainees. It is important that trainee's learning experiences be identified with the Ministry, such that they reflect their priorities and that the trainees provide service to the Ministry even while completing their training.

Accomplishment of this IR and IR's 1 and 4 are proposed in collaboration with TEPHINET, the consortium of FETPs. TEPHINET has an Executive Secretariat in Atlanta, co-located with DIH and a regional office in Peru for Peru, Colombia, Mexico, Canada and the USA. Coordination and collaboration are facilitated by regular meetings with the Atlanta staff and frequent phone and electronic communications with the other offices

Challenges to completion of these plans will include, among others,

- the capacity of the Ministries of Health to dedicate leadership, staff and other resources needed to undertake them
- coordination of these efforts in a multi-country project, and,
- the financial and technical capacity of the Ministries of Health to implement the sustained training program once external support has ended.

MANAGEMENT PLAN

This activity will be implemented jointly with IR's 1 and 4 by the Division of International Health /EPO. The project team will include representatives of DIH/EPO, the Division of Training/EPO, NCID and other CIO's as the need for subject matter expertise is identified.

TEPHINET, the consortium of FETPs based in Atlanta and Geneva, can offer coordination with the other FETPs in the region and elsewhere. Through a grant or cooperative agreement with CDC to be established under this project, TEPHINET can therefore offer assistance in placing trainees in established programs, faculty for training of trainers and of supervisors, and possibly

opportunities for supervised experience outside of the targeted countries. DIH would be responsible for coordination of this input with the needs of the Ministries and USAID.

The Ministries of Health of each country will have to provide the following support to the activities in order to make them sustainable. The suggested form is illustrative only and can be adjusted to suit the needs, resources and customs of each country.

- Nomination and financial support for FETP staff
- Financial support (increasing percentage thereof) for operational expenses of on-going program, including field investigations
- Salaries of trainees during the 2-years of the training

In the experience of the DIH, it will take approximately 6 months to establish agreements with the MOHs, develop a suitable curriculum and training materials (Spanish), recruit faculty, staff and field supervisors, recruit and start-up the first class of trainees. A second class can begin the following year. CDC staff must remain in-country until the graduation of the 1st class to lend technical support to the host and other country governments. These graduates can then take over the functions of the field supervisors, the counterparts can take over the training and continuing education of the epidemiologists and maintain the short-courses. Therefore, this proposal remains a 3-year plan. This model has been proven successful in a variety of other countries and settings and it is considered inadvisable to short-cut the FETP design.

RESOURCES REQUIREMENTS

The attached budget was developed with the following assumptions:

MOHs will commit to the following:
- payment of a counterpart FETP Director
- payment of salaries and travel expenses for 16 trainees
- payment of extra time and incentives for 10-16 field supervisors

Project monies will be used for the following local expenses:
- staff and start-up for FETP office
- travel for all staff and trainees to investigations and in support of field supervisors
- computer hardware and software for office staff and all trainees
- workshop expenses for training of supervisors, training of trainers and FETP classes
- consultation fees from TEPHINET countries
- attendance of trainees and staff in international conferences

INTERMEDIATE RESULT 3: INFECTIOUS DISEASE AND ENVIRONMENTAL HEALTH LABORATORY CAPACITY REHABILITATED

STATEMENT OF THE PROBLEM

The countries significantly affected by Hurricane Mitch (which include Honduras, Nicaragua, Dominican Republic, Haiti, Guatemala, and El Salvador) have sustained enormous damage to their entire public health infrastructure, including their public health laboratory capacity. The exact extent of the damage is difficult to assess, especially since information about the baseline capacity is scarce. Some reports have indicated that nearly 30% of the health infrastructure was destroyed or damaged. Honduras and Nicaragua, were the two most affected countries with significantly more damage. The negative consequences of Hurricane Mitch on public health laboratory infrastructure have included the following:

- Physical impact of the hurricane on laboratory infrastructure,
- Increased demand for laboratory services as a result of contamination of drinking water supplies, infectious disease outbreaks, and disruption of services, and
- New and emerging disease and exposure threats as a result of the hurricane that require expertise and technology not yet available in the affected countries.

Endemic and priority diseases of concern to these countries for which laboratory support is necessary include the following: diarrheal diseases, malaria, dengue fever, acute respiratory infections, parasitic diseases, cholera, Venezuelan equine encephalitis (VEE), leptospirosis, schistosomiasis, yellow fever, and hantavirus. In the immediate post-hurricane period, outbreaks of malaria, cholera, and leptospirosis have occurred. Additionally, the capacity to address environmental concerns regarding food and water safety is critical.

WHO recommends that all countries should have the ability to provide laboratory diagnosis of "common" diseases endemic in their areas and the ability to refer specimens from suspected "uncommon" diseases to an appropriate reference laboratory. However, pre-existing laboratory infrastructure in the region was deficient, as shown by laboratory assessments carried out in the region in recent years by PAHO and the Association of Public Health Laboratories. Following the hurricane, an assessment of the public health laboratory situation in Honduras has been conducted. Specific needs that were identified include the need for facilities infrastructure improvement, essential equipment, staff training, reference materials and guidelines. Only with such support would the laboratory be able to assume the full role demanded of a laboratory in emergencies such as that which they have faced with Mitch.

In contributing to this proposal, the CDC Dengue Branch has focused only on Honduras since it has greatest familiarity with this country and understood it to be the most severely impacted by Hurricane Mitch.

The existing dengue diagnostic laboratory serves all of Honduras and is currently located in crowded facilities in the Hospital Escuela in Tegucigalpa. A new virology laboratory, approximately 95 percent complete, has been under construction for several years and has laboratory space designated for dengue testing. Partial funding has been identified to complete this facility which suffered damages from Hurricane Mitch but additional funds are needed for

installation of a reserve water supply system and other items before the facility can be occupied. Discussions with the director of this facility and staff at the USAID mission and Pan American Health Organization (PAHO) office in Honduras about this new facility have revealed that the Ministry of Health (MOH) of Honduras is very interested in having this laboratory operational as soon as possible.

Given the destruction reported from the countries impacted from Hurricane Mitch, it is acknowledged that public health laboratory and surveillance systems suffered great setbacks. Ensuring a well-equipped, well-trained network of public health laboratories in the Central America region will promote information sharing and help establish a plan of action in case of future emergencies. It is clear that each targeted country has a unique system in which laboratory rehabilitation, capacity building and surveillance capabilities need to be evaluated for post-Mitch enhancements. Designated central or national laboratories for each country will be the primary focus for rehabilitation and training in this project.

RESULTS FRAMEWORK

CDC, in concert with the Association of Public Health Laboratories (APHL) and PAHO, plan to respond to these issues. CDC's National Center for Environmental Health and the National Center for Infectious Diseases both have laboratory expertise and are recognized experts in laboratory research. However, neither Center has the experience or sufficient field staff to provide the necessary rehabilitation services to the countries impacted by Hurricane Mitch. CDC plans to partner with APHL through the award of a cooperative agreement for the implementation of IR 1. (See Annex 1 for background information on APHL).

The focus of these objectives is to ensure that these countries health systems are prepared for future natural disasters or catastrophes, by enhancing the laboratory capability to detect and diagnose diseases and environmental threats associated with such disasters. These activities will also enhance the current health infrastructure to ensure the maintenance of capacity to monitor and control endemic and/or emerging infectious diseases. The following results framework is suggested.

Result 1.1 - Public health laboratory network within and between the six countries established.

Indicators

- Plans of action developed with each country specific to high priority infectious disease and environmental health detection, control and prevention strategies
- Communication pathways developed and strengthened between country central and peripheral public health laboratories
- Sharing of data, resources, best practices and training between countries
- Regional full coverage for disease epidemics in the Central America region to rapidly detect disease, access and share data and mount an appropriate response to disease threats established

Activities

- Conduct in-depth assessment report of specific country requirements and priorities
- Evaluate the effect Hurricane Mitch has had on health system infrastructure, disease incidence, and laboratory facilities and equipment conditions
- Coordinate and conduct two meetings per year of key public health laboratory personnel from each country's central and peripheral laboratory
- Conduct one meeting per year of key central laboratory staff of six countries
- Develop working plans for inter- and intra- country information sharing, training, and consultation

1.1.1 Country laboratory "Centers of Excellence" identified and established

Indicators

- Centers of excellence will be established to potentially serve multiple countries, and provide on-site training, reference laboratory services, surge capacity and consultation in specific disease categories
- Each these centers will have expertise and experience in specific disease management (e.g. Honduras and Dengue)

ACTIVITIES

- Identify country central public health laboratories which can serve as reference and training centers for specific diseases
- Provide appropriate resources and consultation to central laboratories to serve as the "Centers of Excellence" in the region
- Establish mechanisms which allow for laboratory exchange between Centers of Excellence (e.g. laboratorians from El Salvador trained in Honduras laboratory in dengue)

Result 1.2 –Central and/or peripheral Public Health Laboratory infrastructure enhanced to meet essential requirements

1.2.1 Laboratory facilities enhanced to meet essential requirements

Indicators

- Rehabilitation of the public health laboratory infrastructure to minimally return to pre-hurricane conditions with additional capacity building as possible
- The building housing (minimally) the central laboratory should be configured to provide adequate and appropriate facilities for a biosafety level 3 containment hood for safely working with infectious agents such as *Mycobacterium tuberculosis*.

Activities

- Identify need for facilities repair and upgrade
- Determine baseline requirements for enhancements

- Document country requirements for laboratory rehabilitation and support, and provide recommendations and plans for improvement
- Advice in appropriate repairs and upgrades necessary for the functioning of essential equipment and employee safety
- Provide consultation for identified facility upgrades

1.2.2 Public health laboratory equipment enhanced to meet testing needs

Indicators
- Laboratory tests that are cost effective, easily and rapidly performed, efficient, and adaptable instituted in central laboratory
- Process developed for the continued review of the tests and equipment used at all levels
- Installation, maintenance and appropriate use of equipment for testing needs
- Use of appropriate equipment to provide the protection of laboratory personnel and the immediate laboratory environment from exposure to infectious agents.

Activities
- Develop a short and long term program plan for equipment replacement and augmentation
- Determine priority needs, issues related to purchasing and shipment and proper use of equipment.
- Purchase equipment in conjunction with training programs (as necessary) that address appropriate use and application.
- Purchase equipment with appropriate performance specifications, dimensional specifications, electrical specifications, delivery requirements, installation requirements and suggested vendors
- Provide equipment through country distributors with extended service and repair contracts whenever possible.
- Ensure training of laboratory personnel on appropriate use of equipment

1.2.3 Laboratory supplies and reagents available in sufficient quantities for testing

Indicators
- Adequate mechanisms for procurement, storage of laboratory supplies and reagents established
- Joint, unified plan for the acquisition of test kits and instruments by the public and private sector laboratories developed
- Dialogue with Ministries of Health to encourage long term commitment of funds for laboratory materials and supplies

Activities
- Identify governmental or non-governmental organizations capable of mobilizing emergency supplies of drugs, diagnostics, vaccines, or antisera

- Determine which vaccines, drugs, or diagnostic reagents are presently available, and what surge capacity would be required for their production, distribution, and use.
- Identify key Laboratory and Ministry of Health leaders to meet and discuss a consistent supply of reagents, etc. for laboratory testing

Result 1.3 – Quality assurance and quality control operations developed and adapted to each country

Indicators
- Central and/or peripheral laboratories to have current standard operating manuals and plans for high level operations
- Central and/or peripheral laboratories to have documented laboratory safety instructions
- Laboratory procedure manuals, plans, and guidelines developed for each country
- Public health laboratory functions for central and peripheral laboratories documented
- Appropriate shipping and packaging of specimens procedures adopted
- Adequate mechanisms to provide environmental testing instituted
- Proficiency testing program established
- Comprehensive laboratory evaluation program established.

Activities
- Develop or adopt a Safety/Operations manual that identifies the hazards that will or may be encountered, and which specify practices and procedures designed to minimize or eliminate risks.
- Implement evaluation program necessary to assure the quality of pre-analytical, analytical and post-analytical phases of laboratory testing
- Document standard methods for critical tests, guidelines for specimen collection and transport, patient test result management and record keeping, etc.
- Assist in the development of core functions document which identifies capabilities and capacities of central and peripheral laboratories
- Administer a pre-test/post-test for trainees to illustrate impact of training program
- Revisit and evaluate laboratories to assess level of implementation and progress of training received

Result 1.4 – Central and peripheral laboratory personnel prepared and trained for testing specimens of priority disease areas and reporting results in a timely fashion

Indicators
- APHL will provide training for key laboratory staff in laboratory skills as necessary

Activities (illustrative)
- Assess necessary skills (and gaps) for public health and laboratory services
- Develop short-course curriculum and materials.

- Recruit appropriate public and private sector personnel for basic laboratory and surveillance system training with MOH in countries
- Facilitate and/or provide training in areas such as laboratory procedures, lab support services, management and operation, proficiency testing, environmental testing, and disease management
- Deliver teaching seminars and workshops in specified training areas
- Provide training resources and/or access to materials for future training

Result 1.5 - Country and regional plans of action to prepare laboratories to handle surge capacity in emergency situations

Indicators

- Developed mechanisms to handle complex emergency situations of infectious disease outbreaks
- Established relationships with countries to seek assistance when necessary (e.g. from Mexico's national reference laboratory, Instituto Nacional de Diagnostico y Referencia Epidemiologio)

Activities

- Develop disease specific plans of action to establish procedures for handling surges in laboratory activities

- Collaborate with regional laboratories and with PAHO to establish relationships between laboratories in the region for future disaster situations, disease outbreaks, etc.

Result 1.6 - Dengue training and proficiency testing capacities for Honduras established

Indicators

- Ensure that all testing sites have a continuous, high-quality laboratory diagnostic capability in diagnosing dengue
- Establish satellite laboratory facilities established to test for and diagnose dengue in the cities of San Pedro Sula, La Ceiba, and Choluteca
- Regular production of critical reagents for the diagnosis of dengue instituted
- Process for the distribution of reagents to other Central American countries established

Activities

- Send three laboratorians to the Dengue Branch of CDC in Puerto Rico for training in the serologic, virologic and molecular diagnosis of dengue
- Involve trainees in the ongoing proficiency testing program that CDC and PAHO conducts annually with 25 participating dengue laboratories in the Americas
- Consultation and on-site assistance from the CDC to produce stocks of reagents in the new central laboratory facility
- Establish mechanisms which allow for the production and distribution of reagents to regional laboratories

APPROACHES TO BE USED

Much of the activities of this project rely on the results of an in-depth laboratory assessment. In assessing country public health laboratory functions, several basic reference documents including APHL reports on public health laboratory organization and a 1994 World Health Organization (WHO) publication on health laboratory services can be used to guide the analysis and derive recommendations appropriate to laboratory operations.

Although public health laboratories may be defined generally by certain core functions, there are many, often significant, operational differences among them. These differences are related to patterns of disease morbidity and mortality of the populations served, resource availability, the level at which the laboratory operates within the health care system (national, regional, or local), public priorities and other social and economic factors. These are all factors for review and consideration to impact public health laboratory practices within a given country.

For this project, an assessment team will be established to work specifically with each country to evaluate the effect Hurricane Mitch has had on health system infrastructure, disease incidence, and laboratory facilities and equipment conditions. It is essential that the team acquires a more complete understanding of the public health system, public health concerns/problems and the current laboratory support services so that a more appropriate assessment can be accomplished. To accomplish this, a written pre-assessment document will be completed by select country representatives and evaluated prior to the on-site visitation. The

assessment team will consist of U.S. State Public Health Laboratorians, APHL staff, and local participation by the MOH and key leaders at the country level Initial assessments are to pay special attention to HIV among STDs, as this information would be helpful to USAID's regional Central America HIV Prevention Initiative. The laboratory assessment team(s) will coordinate visits with other project participants.

The country specific assessment team will examine the current public health laboratory system and practices, and develop recommendations and plans for improvement. Project leaders will meet with public health officials and laboratory personnel in examination of existing infrastructure and identification of prioritized needs. The assessment team will travel to country central and peripheral laboratories to:

1) obtain a better understanding of the training needs of public health laboratorians;
2) review the existing laboratory facilities;
3) determine the scope of laboratory services provided at the jurisdictional levels;
4) obtain an understanding of the political and social interactions which affect public health practice;
5) observe the degree of interaction between epidemiology and laboratory programs at all levels; and,
6) gain a better understanding of the public health problems of the country. In this assessment, special attention will be paid to concerns and effects left by the devastation of Mitch.

Furthermore, the assessment visit will evaluate current laboratory testing practices in the areas of bacteriology, parasitology, sexually transmitted diseases, mycology, virology, clinical chemistry and environmental testing (including laboratory testing in water bacteriology, water chemistry, pesticides/herbicides, organics, inorganics, heavy metals) In particular, the team will consider laboratory rehabilitation issues that are a direct result of Hurricane Mitch damage. The assessment will also evaluate the extent or availability of standard operating procedures, manuals of methods, quality assurance plans, safety guidelines, safety equipment and infectious waste disposal guidelines. Determinations will be made if the facilities, equipment, personnel and supplies are adequate for the services provided. This will include a look at existing space, utilities, safety features, reagents/supplies and instrumentation. An evaluation and discussion on the needs to improve the public health laboratory services will be provided.

As a result of the assessment trip, a plan of action (for laboratory rehabilitation and enhancement) will be developed collaboratively with each country specific to high-priority infectious disease and environmental health detection, control and prevention strategies. This program plan will be developed for establishing and maintaining essential equipment and facilities to ensure high-priority, quality testing. Over the duration of the project period, APHL and CDC will purchase, ship, and install appropriate equipment and necessary upgrades and repairs.

Based upon assessment reports provided by APHL, program plans for equipment purchase and training workshops and/or materials will be discussed with CDC project leaders, MOHs, PAHO, and USAID resident missions.

A specific objective-based curriculum for training will be developed focusing on priority laboratory needs. Such training will focus on areas identified and agreed upon by APHL assessment team and other project leaders. Training will be provided both in-country and in U.S. public health laboratories using short-term courses and hands-on workshops. Pre and post tests will be taken when appropriate.

Senior laboratory technicians may be selected to travel to U.S. State public health laboratories to participate in high priority training program. Training may include: 1) public health laboratory operations and management; 2) surveillance/epidemiological investigations; 3) laboratory safety; 4) data management and other identified areas, as necessary.

In-country training of laboratory scientists will include teaching seminars and workshops in specified training areas. These training activities will be held in the country making the request and at suitable locations determined by project leaders, PAHO, and MOH. Results of the on-site visit will be used to define the logistics of provision of APHL services in, and outside, the country

To further develop inter and intra-country collaboration, APHL will develop mechanisms for the exchange of information and technical training between and amongst countries in areas such as chagas and dengue.

In collaboration with the various MOH, USAID missions, and regional PAHO offices, an Emergency Preparedness Plan will be develop after the assessment reports. The meetings that were mentioned above will also serve as a open forum to discuss issues related to emergency preparedness. In these meetings, leaders will discuss and determine the readiness of country laboratory systems in case of emergency threats. APHL staff and members will oversee activities related to plan development.Based upon the priorities set by each country, the technical training and consultation will provide the country laboratory technical supervisors and senior technical staff with the necessary skills to perform tests and to make technical decisions regarding the tests that will be needed. These in-country and U.S. based training programs will address high priority training needs to assist in the development and provision of quality assured laboratory services for the diagnosis and management of disease. Training manuals and materials will be provided in such programs.

APHL will work with each country to:

- Determine laboratory priorities
- Identify and address issues which constrain quality laboratory practice
- Identify and address training and other needs for analyzing and interpreting laboratory samples
- Identify and address the role of the laboratory in disease outbreaks
- Hold training workshops to address issues related to quality assurance, quality control, and laboratory safety

COORDINATION

Project leaders of each participating institution will handle coordination of each step. Specifically, centralized meetings between project leaders and country participants will discuss project status, limitations and obstacles, next steps, and further coordination efforts as necessary. In close collaboration with the Ministries of Health, and in coordination with PAHO and USAID, APHL staff and members along with CDC representatives will coordinate project activities.

In order to initiate discussions of an inter-country laboratory network system, regular meetings every year in a centralized location will occur. Approximately 3 leaders from each country and representatives for USAID, CDC, PAHO, APHL and other partners will meet to discuss findings and next steps in the development of a laboratory network.

MANAGEMENT PLAN

The Association of Public Health Laboratories will implement this intermediate result under a CDC cooperative agreement. This activity will be implemented with a collaborative effort between the National Center for Environmental Health (NCEH), Division of Laboratory Sciences (DLS), and the Association of Public Health Laboratories (APHL). The project will include consultation and input from the National Center for Infectious Diseases (NCID).

Consultation and training activities will be implemented jointly with NCEH, DLS, NCID, APHL and the Public Health Program Practice Office (PHPPO). Laboratory support and quality assurance functions will be a joint collaboration between APHL and NCEH, DLS and NCID.

RESOURCES REQUIREMENTS

The resource requirements for this IR are in the attached budget sheets.

INTERMEDIATE RESULT 4: CAPACITY OF MINISTRIES OF HEALTH TO DESIGN AND IMPLEMENT COMMUNITY BASED PREVENTION AND CONTROL OF DISEASE

STATEMENT OF THE PROBLEM

In the wake of the Hurricanes George and Mitch, outbreaks of dengue, cholera, leptospirosis and other diseases have already been reported, though information about them remains insufficient. The prevention and control of infectious diseases, already a problem in these countries was worsened by the interruption of communication and loss of infrastructure. Communities that in general lack the resources and skills to protect themselves from threats that come from within their household and community environments were much less able to cope with the enormous challenge presented to them by the hurricanes emergency.

Based on the activities of IR1, IR2 and IR3 the countries will have enhanced laboratory capacity, epidemiology, and will have selected a priority disease to target for control and prevention. Although there are multiple problems that deserve attention in each of these countries it is important that at least one health problem is selected and addressed to show the results of the activities from the other IR's particularly at the community level.

For every priority disease, there are multiple programs already in place implemented by Governments, non-governmental organizations, universities, PAHO, and the communities themselves. There are also important players in health that are not a part of the formal MOH structure that are working on health-related programs (water and sanitation, air quality, food security). Selection of the particular program will involve assessing the priorities, understanding the strategies and accounting for the existing resources.

Community-based prevention programs offer a sustainable means to protect affected populations from the infectious disease consequences of natural disasters. Community-based prevention programs that are suitable, well accepted and promote an active role of the community have proven to be more effective than those in which the community is not factored into the program planing, implementation and evaluation. Examples of community-based prevention programs are those addressing diarrheal diseases, filiarasis, malaria, intestinal helminths, and dengue. For example, private sector production and sale of safe containers and disinfectant for water; organizing home-based care for HIV or other chronic diseases; community organized environmental cleanup programs, immunization programs; school-based health outreach programs; training community members in maternal health and safe delivery; the use of insecticide impregnated bed nets and window and door screens; and production of protective equipment for persons with filiarsis, are all examples of interventions that have been tested in other Latin American and Caribbean countries and hold great promise for improving health.

Such programs have proven to be effective in helping build the framework of multi-sectorial cooperation that blends qualitative and quantitative approaches upon which other community-based prevention can later be added.

Under this IR, Ministries would involve all stakeholders, including non-governmental organizations, the private sector and the community in order to successfully select and then implement a targeted prevention and control program. Personnel from the MOH in the context of Data for Decision-making and the Field Epidemiology training program will work with the communities to establish the acceptability and accessibility to these health programs.

RESULTS FRAMEWORK

The following results are proposed to help achieve the Strategic Objective of " Re-establish and sustain the capacity for assessment of health status and the early detection and effective response to outbreaks and changes in disease patterns ".

4.1 – Capacity to determine health priorities established (see IR1)

Indicators

- MOH identifies 1-3 health problems to be addressed using improved information systems, epidemiology, and community-based approaches (e.g., TB, MCH, filiarasis, leptospirosis, dengue, malaria, diarrheal diseases, vaccine preventable diseases)

Activities (illustrative)

- Assessment tool and priority setting materials developed using local information, counterparts, and country level staff and programs.
- Criteria for disease selection established, e.g. magnitude, severity, existence of an effective prevention or control strategy, available resources, fit with existing programs.
- Workshop for decision-makers for priority setting with wide participation
- Use of public health surveillance and laboratory data in program design, implementation, and monitoring identified.
- MOH with FETP support conducts qualitative studies to evaluate community risk perceptions and perceived health needs using focus groups and ethnographic descriptions.

4.2 – capacity to analyze health problems established

Indicators

- 1-3 health problems characterized per country. This will be done in collaboration with each country's surveillance and monitoring systems as well as the FETP's (refer to IR1).
- 38 Field epidemiologists trained and able to fully conduct problem / decision analysis

- Basic training in problem analysis provided to 50-100 public health workers per year by the FETP program in each country.

Activities (illustrative)

- Existing data concerning health priorities acquired and analyzed at the local level
- Laboratory data for surveillance obtained and linked locally
- Access to literature increased through subscriptions, internet, CDC provision
- Need for additional information identified.
- FETP trainees and other in-country staff design methods for collection of information pertaining community attitudes towards interventions
- Full profile of disease problem and community-based interventions selected presented to multi-sectorial working group
- Technical assistance from NCID scientists as requested
- Working group identifies determining, contributing and root causes of identified health priorities

4.3 – Select sound, appropriate health strategies and interventions

Indicators

- 10 evidence-based public health reviews conducted by national (or local) staff to determine the most effective and cost-effective interventions for priority health problems
- 6 public health community based interventions or program strategies chosen

Activities (illustrative)

- Access to literature and published information on interventions and strategies improved. Link with Community based prevention services guidelines program. (Linked with information dissemination in IR2 and IR3).
- Workshop on methods to evaluate and select interventions held (e.g. efficacy, effectiveness, cost-effectiveness, and operational research for comparison of strategies).
- Criteria for selection chosen (effectiveness, cost-effectiveness, feasibility, acceptability).
- Technical assistance on selected diseases as requested by countries.
- Additional information, e.g. feasibility, acceptability, collected as necessary by FETP's, and communities.

4.4 - Capacity to develop effective, cost-effective, appropriate plans enhanced

Indicators

- Number of project and program plans at all levels of the health care system that are based on accurate, scientifically valid information
- Number of community-based projects that have evaluated suitability, acceptability and that have promoted an active role of the community

Activities (illustrative)

- Workshop with a wide variety of decision-makers for development of implementation plans for chosen interventions.
- Technical assistance as requested from regional, bilateral or other agencies.
- Regional workshops (PAHO, MOH, Non-governmental organizations, TEPHINET) to share lessons learned in prevention and control of diseases.
- Monitoring and evaluation frameworks for plans developed
- Promotion of community involvement in planning, design and evaluation of health interventions in collaboration with health, other Ministries, and non-governmental organizations.

4.5 Implement prevention and control programs for priority diseases.

Indicators

- Number of projects and program plans funded by MOH or other sponsors.
- Improvements in the delivery of the health program selected by the country (proximal measures of quality and efficiency such as increased number of TB cases correctly diagnosed, increased detection of maternal deaths, improved delivery of essential drugs for a specific program)
- Plan to measure health outputs linked with improvements in health program capacities. (Unlikely that within 2 years substantive changes in health outcomes will be measurable).

Activities

- Establish baseline trends and magnitude of health problem (linked with IR1)
- Establish priority questions to be answered by FETP trainees over next 3-5 years (link with IR2).
- Technical assistance in specific disease as requested from regional
- Workplan for specific steps related to the disease selected developed
- Transfer of funds to relevant institution for implementation.
- Monitoring of process and outcome indicators ongoing.
- International, regional and national scientific conferences on lessons learned in specific disease prevention and control activities. Presentation by national staff (FETP and other nationals) of results of intervention activities.

4.6 Capacity to develop strategies for community participation established

Indicators

- Methods for measuring community participation selected (developed) and taught to FETP trainees.
- Number of community-based programs are planned, implemented and evaluated with active participation of the community

Activities (illustrative)

- Methods to assess and promote community participation and self-evaluation presented to MOH
- methods to promote community participation and self-evaluation presented to FETP
- workshop with Working group including community organizations on planning, setting goals and generating resources to carry out community based prevention programs
- all program plans are reviewed to specifically address role of the community in reaching program goals
- technical assistance provided as requested

4.7 – Forum for intra and inter-sectorial cooperation established

Indicators

- number of multi-sectorial working groups formed around health problems
- number of working groups include members outside of the MOH
- One regional conference per year (organized by PAHO, TEPHINET or others).
- Working group established between sponsors to ensure coordinated inputs and plans.
- Working group for each IR established at National and regional level.

Activities (illustrative)

- Stakeholders in health problem identified with MOH
- MOH issues invitations to participate in Working Group
- Working groups established.
- Working Group meets at least every 6 months to review information, develop plans, monitor and evaluate progress

Indicators will be tracked through monthly, quarterly and annual reports. In addition, a final evaluation will be programmed for 1 year after the completion of the project providing resources are identified. A table with indicators and method of collection is included in the annex.

APPROACHES TO BE USED

Based upon the priorities set by each country, DIH will work with the MOHs to develop data-based strategies to prevent and / or control 1-3 health problems in each country. The selection of specific health problems will be made locally after review of information and a priority setting exercise with the respective Ministry of Health. Problems that have been mentioned include malaria, filiarasis, TB, leptospirosis, MCH, immunization, HIV, dengue, and diarrhea diseases including cholera. The various Centers within CDC have agreed to provide subject matter expertise as requested for the chosen priorities to guide the process (National Center for Infectious Diseases (NCID), Environmental Health, Occupational Health, HIV/STD and TB prevention). Additionally, funds will be provided to PAHO for community level interventions where they have the greater expertise and experience

A key component of this IR is the establishment of Working Groups to address priority health problems. CDC will encourage that each priority be assigned to a Working Group chaired by of representatives of the responsible section of the MOH and including as many of the following as feasible and appropriate: other sections of the Ministry, other Ministries concerned with the health problem, non-governmental organizations, the private sector, community organizations, the media and all others. The Working Group will receive training and technical assistance in the design and implementation of control and prevention programs (linked to IR1 and 2).

Working closely with counterparts in the control programs, as well as drawing on expertise from local non-governmental agencies and Universities, DIH will help Working Groups define the parameters that contribute to the problem. The MOH, working with FETP trainees, will be assisted in the collection of additional information including that obtained from facility surveys, community based surveys and focus groups.

Once the root causes of the health problem - including the impact of policies, legislation, health worker and community attitudes and practices - are identified, the control programs of the MOH, working with partners from other sectors and representatives of the community will be in a better position to select the best interventions and strategies available for the prevention and control of the health problem. DIH will assist in identification of strategies and development of strategic and operational plans to address the problems. Program plans will be developed to implement scientifically sound approaches; these might include changes in national level policy, facility-based services and/ or community based actions. Given the 2-year timeframe for this project, full implementation of any plan may not have been accomplished before the end of external assistance, so changes in morbidity, mortality and process indicators will be monitored by the MOH for future adjustments in the programs.

Many of the countries in the target region can be supposed to share common health and operational problems. Training workshops will be held on an inter-country basis where subject areas are overlapping. During the early phases of the project, it is expected that local expertise will be identified in one or more of the host countries. For example, there are MPH programs in Honduras and Nicaragua where expertise in project planning may be identified.

Given the proximity of the target countries and the ease of movement between them, it is sure that they share many common health problems and that transmission across countries may pose a problem. This phenomenon has been described as the "epidemiologic corridor". If this has not already been addressed by PAHO or other regional body, it is planned to hold a regional workshop in years 1 & 2 to identify and address regional strategies for prevention and control.

The FETPs that are to be established in the region serve as an important resource to this IR. The faculty of the FETP can also support workshops and trainees can be assigned the collection of information for the completion of their competencies.

COORDINATION

In part, coordination will be accomplished by the Ministries of Health and disease control programs with CDC support. The MOH will be encouraged to form Working Groups for each health priority. These WG will include members from the MOH, other Ministries (e.g. Agriculture for malnutrition), the private sector and communities.

DIH / CDC will work in close collaboration with the USAID missions. All consultants will provide briefings and debriefings as desired by the mission. Work plans will be approved by USAID Washington and local USAID missions and quarterly / annual reports will be copied to both entities.

Coordination with PAHO will be twofold. First, funds provided via a cooperative agreement will be in the context of a work plan developed by them and approved by CDC. Reporting on funds is specified within the agreeements. In addition, CDC and PAHO will coordinate in the US and within countries to ensure the best use of local resources.

Challenges to completion of these plans will include, among others, 1) the capacity of the Ministries of Health to dedicate leadership, staff and other resources needed to undertake them, 2) coordination of these efforts in a multi-country project, 3) the financial and technical capacity of the Ministries of Health to implement activities following completion of CDC's contribution 4) Political instability in governments and ministries of health, and 5) Personnel turnover within governments and key Ministries.

MANAGEMENT PLAN

The prevention and control activity will be implemented jointly with the surveillance system activity and the Field Epidemiology Training Program by the Division of International Health /EPO. The project team will include DIH/EPO, the Public Health Practice Program Office and other Centers within CDC (NCID, NCEH, NCHS, HIV/STD and TB). Staffing will be coordinated with National Immunization program (NIP) and PAHO staff for Measles elimination where possible.

TEPHINET, the consortium of FETPs based in Atlanta and Geneva, can offer coordination with Mexico and other FETPs in the region and elsewhere. Through a cooperative agreement with CDC, TEPHINET can therefore offer assistance in evaluation of surveillance systems, development and implementation of training programs, evaluation if programs and rapid response to public health emergencies. DDM and DIH would be responsible for coordination of this input with the needs of the Ministries and USAID.

RESOURCES REQUIREMENTS

The resource requirements are estimated in the attached budget. The actual budget will be greatly influenced by the choice of health problems. For example, USAID missions in countries have already indicated interest in implementing diarrheal disease control strategies using the

production and marketing of water containers as the intervention. The governments of Nicaragua and Guatemala have expressed interest in leptospirosis and dengue control. The budget will be further refined after discussions with missions and Ministries of Health and the priority setting exercises.

IV. STAFFING PLAN

The following staffing plan is proposed to accomplish the SO in the timeframe allotted.

Laboratory reconstruction and training.
National Centers for Environmental Health and The Association of Public health Laboratories
Personnel funded by this project include one laboratory technician at CDC to oversee the implementation and coordination of effort. APHL will hire 2 project managers in Washington and one person to be stationed in-country. In addition, core staff of CDC and APHL will provide assistance as needed to the project.

FETP host countries (2)
Each of the 2 FETP host countries will require a (medical) epidemiologist and a public health advisor.

The epidemiologist will function as the senior consultant to the FETP and be responsible for liaison with the host Ministry of Health, coordination with the other Ministries of Health and CDC advisors, on-the-job training of the FETP Director and staff, assisting in the development and revision of curricula and training materials, identification and training of field supervisors in-country, coordination of field supervisors throughout the region. The epidemiologist will also oversee the implementation of improvements in the surveillance system, providing technical assistance to the host country Ministry of Health, identifying needs for external assistance – epidemiology or laboratory and overseeing the implementation.

Of the 2 epidemiologists based on each of the FETP countries, one will be designated the senior coordinator for the 6 country project. This person will be responsible for coordinating regional activities and act as a resource for the other assignees.

The public health advisor will oversee the management functions of the FETP and assist the epidemiologist in the implementation of technical aspects of the project. The public health advisor will also facilitate laboratory activities, especially as concerns ordering of equipment and coordination of visits as requested by NCEH/APHL. The public health advisor will be responsible for writing reports for USAID (missions and Washington) through CDC /Atlanta as well as assisting counterparts in developing a reporting system on progress made for their Ministries of Health. These reports are not only for the host countries but the others as well.

Non Host countries (3)

Each of the 3 countries that does not host an FETP will require a (medical) epidemiologist as Resident Advisor to the Ministry of Health. The RA in the Dominican Republic will also provide technical assistance and oversight to the MOH in Haiti.

The Resident Advisor will provide coordination and on-the-job training for the improvement of the surveillance system in their country, will assist the MOH in the development and planning of data-based strategies for the prevention and control of 1-3 priority health problems and will work with field supervisors to assist FETP trainees in the accomplishment of their competencies. They will also facilitate the work on the laboratories by facilitating communications with NCEH/APHL, assisting in the identification of technical and resources needs and in ordering and receiving equipment and supplies.

CDC will make every effort to assure not only that all assignees speak fluent Spanish, but that they represent complementary areas of subject matter expertise (infectious diseases, dengue, malaria, TB, injury, chronic diseases,) of interest to their MOH, such that technical assistance can be developed and provided from within the region.

Atlanta
Atlanta will be providing the back up technical, logistic and managerial support to each of the 7 assignees. They will also be acting as liaison between the assignees and the technical support available from subject matter experts throughout the CDC CIO's. The Management Unit based at DIH/EPO will be responsible for coordinating all activities by EPO, NCEH and TEPHINet to assure accomplishment of the SO, will act as the principle liaison with USAID/Washington, will coordinate workplan, reports and financial reporting as specified in the project agreement. In addition, there are also several areas of subject matter expertise required by each country but not totaling a full FTE. As such, the staffing pattern envisaged for Atlanta is:

2 full-time medical epidemiologists providing technical oversight and liaison with subject matter expertise. Travel within the region linking FETP's, field supervision sites, and DDM projects, will represent at least 30% time.
2 full-time public health advisors providing managerial oversight, assuring reporting functions and assisting the medical epidemiologist. Travel to project sites will represent at least 30% time.
1 full-time laboratory technician at NCEH
1 full-time program specialist providing administrative support and liaison
1 full-time transportation specialist providing support for all TDYers in the region
50% communications specialist providing technical assistance and training for MOH in communications principals and development of feedback bulletins
50% training specialist providing assistance in curriculum development and materials design for FETP training, DDM training, laboratory training and all other workshops / short courses
Other expertise, such as in economics, infectious diseases specialists and management on an ad hoc basis in response to needs identified by field assignees in consultation with the MOHs

There are 3 important implementing partners in this effort – PAHO, APHL and TEPHINET.

CDC has held preliminary discussions with PAHO about the best mechanism to assure coordination between the 2 organizations. One possibility is the assignment of one of the above personnel (Atlanta-based) to the PAHO office in Washington. This will be further explored in the near future.

APHL plans to assign one person to the region and 1.5 persons to provide logistical and technical backstopping at their offices in Washington D.C. These and the activities to be implemented by APHL will be funded under this project through a Cooperative Agreement.

TEPHINET will be identifying and traveling technical resources among graduates, staff and trainees of the 5 FETP in the region and potentially worldwide. To accomplish this 2 staff, based in Atlanta, will be funded under this project through a grant or Cooperative Agreement. Most consultation will be provided by the FETPs as needs and skills are matched by TEPHINET.