PROGRAM PROPOSAL TO ASSIST IN THE POST-HURRICANE RECONSTRUCTION OF THE PUBLIC HEALTH CARE SYSTEMS OF CENTRAL AMERICA AND THE CARIBBEAN

Centers for Disease Control and Prevention (CDC), DHHS

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I. INTRODUCTION

In the months of September and October of 1998, 2 major hurricanes hit the Caribbean and Central America, resulting in extensive damage. Hurricane Georges swept first across the Caribbean and coastal United States in late September, causing tremendous damage and suffering as the result of the hurricane's winds and rainfall. For the Dominican Republic, the total damage to farms, roads and buildings was estimated to be in excess of $1.2 billion. A month later Hurricane Mitch struck Central America with even greater intensity, affecting Central America from Costa Rica to Guatemala; the impact was most severe in Honduras and Nicaragua. Over 18,000 people were reported killed or were never found, much of the public health infrastructure was damaged, and conditions favoring disease outbreaks arose. As predicted, post-hurricane outbreaks of cholera, leptospirosis and dengue have since been documented.

In response to this disaster, the Centers for Disease Control and Prevention (CDC) proposes carrying out a series of activities to assist in the reconstruction of the public health care systems and the implementation of programs to control health problems resulting from infectious diseases in those countries most severely affected by Hurricanes Georges and Mitch. CDC proposes a project to re-establish effective public health information systems and the capacity to respond to priority health problems including infectious disease outbreaks in the target countries through investments in both training and physical infrastructure. These inputs will be linked directly in each country to at least one specific health program selected by the MOH with activities in community based prevention and control.

Health information and surveillance systems are the fundamental elements of a public health system which provide reliable and timely information regarding the occurrence, nature and magnitude of major health problems which can threaten the health of the general population. They require active data reporting from health facilities, laboratory support for diagnostic confirmation and other analyses, trained epidemiologists for analysis of and response to the information, and health sector decision-makers who understand epidemiological principles to guide the policies they adopt. When successfully implemented, these systems are instrumental in assuring a comprehensive picture of the health status of the population and assist in the prevention and control of major public health threats, especially infectious diseases with epidemic potential.

The strategic objective for this initiative is "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". To accomplish this objective CDC has developed four intermediate results (IR) packages which address the physical infrastructure, the training needs and the processes required

for effective public health surveillance, program development and response capacity for infectious and non-infectious diseases.

IR 1. Disease surveillance rehabilitated and information used for public health decisions
IR 2. Increased availability of trained epidemiologists in the region and the training of other levels of health workers by these epidemiologists.
IR 3. Infectious disease and environmental health laboratory capacity rehabilitated
IR4. Capacity of ministries of health to design and implement community based prevention and control of disease established

Within CDC, these IR packages will involve the National Center for Environmental Health, National Center for Infectious Disease, National Center for Health Statistics, National Immunization Program, National Center for HIV/STD and TB Prevention and Control, Public Health Practices Program Office, Epidemiology Program Office, and Office of Global Health. The primary counterparts for these activities will be the Ministries of Health of the target countries. In addition, external collaborators will include the Association of Public Health Laboratories, the Training in Epidemiology and Public Health Intervention Network (TEPHINET), the USAID regional and country missions, and the Pan-American Health Organization. As activities are planned at the country level with local counterparts, other collaborations may be defined.

Many of the countries in the target region share common health and operational problems; when the subject areas overlap, training workshops will be held on an inter-country basis. During the early phases of the project, expertise will be identified in one or more of the host countries. For example, there are MPH programs in Honduras, Costa Rica, and Nicaragua where expertise in project planning may be identified. Wherever possible, CDC will follow the this hierarchy when providing technical assistance and support to target countries: (1^{st}) expertise from the country, (2^{nd}) expertise from another country in the region, (3^{rd}) staff of the regional FETP, (4^{th}) expertise from a TEPHINET country in the region (Mexico, Colombia, Peru or other), (5^{th}) CDC.

The CDC recognizes that many institutions are or will be contributing to the reconstruction efforts following Hurricanes Georges and Mitch, and that coordination among them will be crucial to assure success and avoid duplication of efforts. The CDC is committed to working in partnership with these other institutions in the implementation of this proposal. In this spirit, work plans will be developed only following consultation with USAID country offices, Ministries of Health, PAHO, and other relevant entities.

Whenever possible, CDC will promote a region-wide strategy to achieving the objectives of this proposal. The relatively small populations of these countries, their geographic proximity to one another, and the historic spirit of collaboration between them, all favor such an approach. Thus activities will occur both at the sub-regional level (potentially extending beyond the target countries), as well as the country-specific level.

II. PROJECT COORDINATION

Within CDC

Atlanta

This project draws upon expertise and proposals from a variety of CDC Centers and Offices. The overall project coordination will be provided by the Division of International Health, Epidemiology Program Office (DIH/EPO). EPO will serve as point of contact with USAID and will ensure that CDC program activities are integrated into a single cohesive program. EPO will coordinate activities of the four Immediate Result components, call regular meetings of the IR team leaders, consolidate reports and facilitate communications. EPO will be staffed full time by an epidemiologist, a public health advisor and support staff dedicated to this project and will call upon the IR Team Leaders, USAID, PAHO and other organizations as identified for membership in a Coordination Committee.

Within each IR, multiple CIO's will be called upon to provide subject matter expertise. Each IR will form a project team with representatives of the concerned technical area. The team leader will be responsible for IR specific work plans, forming the team and directing the work, day-to-day coordination with other IR teams and giving reports to the Coordination Unit and Committee. It should be noted that the formalized structure is a fallback. In reality, members of any IR team are likely to be members on the others and team leaders will be in close physical proximity to each other. Informal communication will be the best and most productive form of coordination. The CDC assignees in-country will be members of all of the teams.

In many cases, activities are listed under more than one IR. In fact, the strategic objective is envisaged as one whole with interlinking purposes, activities and outcomes. One example of this would be in Honduras where the mission has expressed interest in dengue control as the possible health priority. Should this be identified by the MOH, NCID will be called in to work with the MOH in the technical implementation of the project. They will call upon the FETP staff and trainees to assist in collection and analysis of such information related to case fatality, increased diagnostic accuracy or other operational question. The FETP and / or the HIS will collect information key to monitoring and evaluating the impact of the program on population and the FETP's can help to define and address any operational problems which occur in the implementation. In other countries, water vessels may be a control strategy in the response to outbreaks of diarrheal diseases and thus be incorporated into the epidemic preparedness and response protocols. In this case, the laboratories could play a key role in quality assurance. The FETP's would be crucial to detecting outbreaks, assessing community support and establishing the cost-effectiveness of the strategy. The bulk of this kind of coordination will take place in-country, but the IR teams and Coordinating Committee will facilitate the process where necessary and appropriate.

Atlanta and CDC in-country

The Hurricane Project Coordination unit (centered in the Epidemiology Program Office) will be responsible for direct communication with the staff assigned to the field. The unit will collect quarterly and other reports for consolidation and forwarding as required by the project management. The Hurricane Project Coordination Unit will be responsible for coordination and communication with USAID/Washington. However, free communication between concerned parties is encouraged.

The Hurricane Coordination Committee

CDC, APHL, OFDA. USAID, and PAHO will be members of a Coordination Committee which will 1) provide technical input for the planning process; 2) review progress towards the results and objectives on a bi-annual basis and make suggestions for improvement; and 3) assure coordination of inputs in the region. All quarterly reports of activities will be disseminated to all members of the Coordination Committee. Bi-annual meetings will be held in Atlanta and Washington on a rotating basis. PAHO bi-annual reports will be provided to CDC in keeping with the submitted work plan and provided to USAID as part of CDC reporting.

In-country Coordination

Country specific workplans will be developed in close collaboration with the respective Ministry of Health, USAID and the country PAHO office as well as other local projects. Ministries will be asked to provide office space and logistical support for the long-term resident advisor to facilitate on-going communication and capacity building. Quarterly and annual project reports will be copied to the Ministry and available to others upon request. A joint bi-annual review of progress will be done for each IR and the SO with feasible recommendations for adjustments developed that have buy-in from all concerned parties.

CDC Resident Advisors will work in close collaboration with the USAID missions. All consultants will provide briefings and debriefings as desired by the mission, workplans will be approved by them and quarterly / annual reports will be copied to them. USAID will participate in the bi-annual in-country reviews.

While the Coordination Unit will be available for backup and problem resolution, direct communication with the in-country partners will be through the Resident Advisor who would have responsibility to supervise all IR's.

Regional Coordination

There are already several bodies in the region responsible for region-wide activities, including PAHO and G-CAP. Under this Strategic Objective (SO), CDC plans to act as a resource to these bodies as requested much like it is a resource to the individual Ministries of Health in-country. Any meetings and activities will be coordinated with them, technical assistance for e.g. regional maps of disease incidence, regional strategies for control will be provided to them. The exact

counterparts and mechanisms for communication and action will be determined after the planning visits in the region.

One of the 2 FETP epidemiologists will be designated the senior coordinator for the regional activities and will be responsible for coordinating the on-the-ground activities that have a regional application as well as being a resource for the other epidemiologists. This person will be responsible for calling the Regional Meetings or responding to those called by PAHO. The senior coordinator will call bi-annual technical meetings of the CDC staff and their counterparts to monitor project activities and provide a forum for sharing experiences. Given the essential role of PAHO in regional activities, this epidemiologist will communicate directly with PAHO / Washington and other regional entities with copies to the Coordinating Unit about these activities.

III. INTERMEDIATE RESULTS

INTERMEDIATE RESULT 1: HEALTH INFORMATION AND DISEASE SURVEILLANCE REHABILITATED AND INFORMATION USED FOR PUBLIC HEALTH DECISIONS

STATEMENT OF THE PROBLEM

In the wake of the Hurricanes, the Ministries of the affected countries found themselves without an adequate information base and without the infrastructure and sometimes the skills necessary to identify and control outbreaks of preventable diseases. The Ministries were and remain unprepared to handle this type of complex emergency without assistance from international agencies. The Health Information Systems of the countries, which include assessment of the health status of the population and surveillance of diseases for immediate notification of epidemic potential, remain inadequate to allow the Ministries to identify health problems in a timely fashion and to prioritize areas for intervention.

The Data for Decision-Making (DDM) project has developed proposals for improvement of the Health Information Systems with the Ministries of Health in Nicaragua (before the Hurricane) and in Honduras. Since the Hurricane, we have contacted them .through the USAID missions and directly, to confirm their continued interest and support. The proposals in both countries were developed in consultation with the local office of PAHO and plans have been shared with their Washington office. Contact with Ministries in Guatamala, El Salvador, Haiti, Costa Rica and the Dominican Republic has just begun. The first step in this plan will be to visit each country and fully describe the project, its strategies and to begin steps toward the development of detailed implementation plans. These plans will reflect the needs of the Ministries, the overlap between countries, the potential for inter-country and regional activities and coordination with other agencies and donors. Each country has many projects in place that link with this proposal and each will want to select those elements most helpful to them in reconstruction and

development of useful, valid and reliable health information systems linking to public health action. DDM projects are always customized to the needs expressed by the host country.

For the last 20 years. CDC has collaborated in the establishment of applied epidemiology training (called Field Epidemiology Training Programs. FETP) and Public Health Schools Without Walls (PHSWOW) in 21 countries. In addition, CDC has collaborated with Ministries of Health throughout the world to develop Data for Decision-Making Projects (DDM), often in conjunction with Field Epidemiology Training Programs. These programs assist Ministries to improve access to information through the health information systems and to improve their capacity to analyze, interpret and act upon the information. Increasingly these two projects are implemented together to ensure that professional epidemiology links with clinical health workers. decision-makers and public health program staff.

There are two programs that CDC is developing for domestic public health purposes that may be quite useful in the context of this project. First is an integrated information and communication system to aid health emergency communications, disease surveillance, epidemiologic investigations, electronic laboratory reporting. distance-based training, and other. critical public health functions for state and local health departments in the United States. This system is based on two models - the Information Network for Public Health Officials and the Health Alert Network. The Information Network for Public Health Officials (INPHO) enables state and local health departments to strengthen electronic infrastructure to improve public health practice. The emerging Health Alert Network will assist national and local health departments in preparing for and responding to infectious and environmental events (such as disasters). The proposal for a public health Early Warning System (EWS) will incorporate these models to meet the needs of the participating Ministries of Health in developing electronic communications infrastructure.

The second program is called the Assessment in Public Health Initiative. This program is based on the 1989 report by the Institute of Medicine (IOM) that recommended improved assessment capacity by local health authorities as one of the most pressing needs in public health. This initiative works with local health and government units within the United States to increase the abilities of local communities to use data and plan relevant health programs. Many innovative strategies have been tried and will be available for the countries in this project for consideration as applicable.

RESULTS FRAMEWORK

The following Results Framework is 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 ".

Result 1.1 - Effective health information system re-established and regional system enhanced

1.1.1 HIS in place and strengthened in 6 countries

Indicators

- Assessment tool and priority setting exercise developed for use in target areas.
- Interviews show that decision-makers have used the information from the selected information or surveillance systems to determine priorities, allocate resources, respond to outbreaks or emergencies, prepare annual or other plans
- The health information system provides data that is more timely, more accurate, has predictive value positive and is used for to guiding public health response and action.
- Data from the health information system developed has been or will be used by International and/or regional health organizations (PAHO, UNICEF, or others) in reports for distribution.

Activities (illustrative)

- Assessment tool developed based on CDC and WHO protocols and expert input.
- Evaluate the information and surveillance systems in each country (define baseline characteristics of key information systems—timeliness, usefulness, sensitivity, flexibility, simplicity etc.)
- Determine priority health information needs in each country
- Identify information gaps
- At least one priority component of the health information system will be selected for substantive improvements
- Develop country profiles (health status baseline, health determinants and risk factor descriptions and goals set for the next years) for major diseases
- Design specific projects to improve existing health information and surveillance systems to meet information needs, including multi-directional flow of information, roles and responsibilities for reporting and actions, laboratory support to HIS functions and needs for infrastructure and equipment
- Assist in health risk mapping for priority health problems
- Reinforce capacity at central and decentralized levels to implement improvements in the information system. As an example, improved national capacity to analyze data.
- Identify existing capacity by level of expertise in community and involve them in the information gathering and design of formats for information coming back to them.
- Link local projects and country programs with Assessment initiative in the US if requested.
- Regional scientific conferences on information systems for FETP's, TEPHINET, and PAHO.

1.1.2 National and regional capacity to detect health problems, collect information, analyze data, and respond to information enhanced

Indicators

- Improved timeliness of reporting and analysis for selected health information program at National level

- Regional institution (PAHO or other) receiving weekly and monthly reports from all member nations within specified time limits
- maps of epidemiologic corridor prepared and disseminated regularly
- plan of action for control and prevention of diseases across borders prepared
- number of outbreaks of infectious diseases detected and responded to by national and local health staff increased
- Recommendations based on health investigations used to improve health or decrease risk in at least half of all investigations

Activities (illustrative)

- Identify and assist in development of national and regional capacity to receive and process health information
- Clear guidelines developed for how information will flow from peripheral to national levels for selected information systems including forms, and communication criteria
- Secondary (informal) information systems developed to enhance disease detection using community reporting (clinical care workers, community reporters, media and others).
- Develop regional profiles for major diseases (at least one per country)
- Assist in risk mapping on regional basis for priority health problems
- Analyses of data at each level will be specified and training to enhance this capacity will be provided by National and regional health staff including the FETP

1.1.3 MOH capacity to plan and implement effective strategy for communications of scientific information enhanced, including links with existing PAHO, WHO, and other FETP public health bulletins.

Indicators

- Public health bulletins produced and distributed on a regular basis
- Articles submitted to peer review journals from each FETP trainee (38 over 3 years)
- MOH ensuring a yearly line item funding to continue the production and distribution of each country's bulletin.
- Yearly production and publication (in paper and electronic form) of country health profile
- Developed and implementation of national and regional communications strategy using variety of media
- Inter-country publication of data established and functioning
- Decision-makers have access to appropriate country and inter-country information in timely fashion

Activities

- Review and assess all in-country public health and laboratory bulletins, in-country communications systems that could assist in the linking and distribution of bulletin communications, links to secondary information distributors such as newspapers, radio, television, and established in-country network systems for all participating countries and regions. Develop a written report of the findings of recommendations to improve both paper and electronic public health communications.
- Produce a comprehensive strategic communication plan for each country to include print and electronic production, management, marketing, and distribution by appropriate means with the utilization of existing distribution channels such as radio, television, Internet, newspapers, community bulletins, and magazines, etc.
- Provide communication training for participant(s) in each country/program on topics such as writing for scientific publications, desktop publishing, production, distribution and evaluation
- Support the communication unit in each country through training and networking opportunities
- Support publication of bulletin and assess cost recovery and sustainable funding for bulletin after Year One
- Provide assistance as needed to regional information sharing.

Result 1.2 – Plan for effective public health Early Warning System (EWS) developed

1.2.1 - Preliminary assessment of the functional needs of the public health Early Warning System completed by the end of six months.

Indicators

- EWS team established according to MOH needs and requirements
- Assessment report listing potential users, functional needs, description of proposed content, and description of EWS operational parameters completed.

Activities (illustrative)

- Establish a collaborative project team representing PHPPO, EPO, PAHO, and the participating Ministries of Health
- Define the users of the EWS
- Define the needs to be addressed by the EWS, e.g., emergency health notification and communication, emergency preparedness and response, data collection and exchange, surveillance, access to guidelines and databases, in-service training, and electronic laboratory test reporting
- Define the data, information and other content to be included in the EWS
- Define the operational parameters of the EWS. (e.g., available communication systems, 24/7 accessibility, bandwidth requirements, security, etc.)

1.2.2 - Public health EWS plan to serve as a blueprint for future implementation and a tiered approach to development of electronic communications infrastructure completed by the end of one year.

Indicators

- EWS critical components identified
- Assessment document identifying the gap between existing and needed capacities completed
- Model plan developed and delivered

Activities (illustrative)

- Identify critical EWS components to be addressed in the plan.
- Assess existing capacity to support defined functional needs (e.g., information/communications systems, human resources, management and organizational systems, etc.)
- For each critical EWS component develop a plan to fill gaps between existing and needed capacities
- Prepare a model plan to meet the functional needs of the EWS, suitable for modification to address unique needs of the participating MOHs

Result 1.3 - Surveillance information is being used

1.3.1 to guide prevention and control programs (see IR 4)

Indicators

- Project and program plans at all levels of the health care system are based on accurate, scientifically valid information
- Project and program plans are funded
- Appropriate telecommunication methods to effectively distribute vital public health information developed

Activities (illustrative)

- Training needs assessment at district and central levels
- Adapt and develop Spanish training materials per needs assessment
- Implement competency-based training program
- Provide support and follow-up for data use
- Identify 1 – 3 priority health problems / country plus one regional health priority
- Assist counterparts in development of appropriate, cost – effective, effective strategies for the control or prevention of 1-3 priority health problems

1.3.2 - for epidemic preparedness and response

Indicators

- Diseases of epidemic potential reported within 48 hours or per national guidelines
- Defined contingency stocks in place
- Response to suspected epidemics occurs per national guidelines

Activities (illustrative)

- Assess the existing capacity in conjunction with 1.1

- Define roles and responsibilities for epidemic detection, preparedness and response (see 1.1)
- Develop guidelines for epidemic preparedness
- Develop a comprehensive plan to upgrade existing notification systems
- Designate Epidemic Committee members
- Determine needs for contingency stocks
- Disseminate guidelines and train as needed
- Implement preparedness plans

Indicators will be tracked through monthly, quarterly and annual reports. In addition, a final evaluation will be programmed for 3 years after the completion of the project providing resources are identified. A table with indicators, etc. is in the annex.

APPROACHES TO BE USED

In this document, the term Health Information System (HIS) describes the on-going provision of valid information needed for assessing health status, defining public health priorities and monitoring programs to Ministry of Health decision-makers. It includes:

- immediate / weekly notification of diseases of epidemic potential or diseases targeted for eradication / elimination
- laboratory confirmation for a subset of the diseases under surveillance
- monitoring disease trends on a monthly basis for determining progress compared to established goals and objectives
- identification of needs for supervision and support
- identification of seasonal trends, etc.
- in-depth information on epidemiology of specific priority problems through sentinel surveillance and surveys
- demographic information on population and infrastructure, and other information on an annual basis
- some management information (such as vaccination coverage) to aid in monitoring programs.

A Health Information System is not considered complete unless the information responds to the needs of decision-makers and is being used to improve health programs.

An essential link between data generation and data use is communications. Information must be available to the right people at the right time in the right form to be used. This program will work with Ministries of Health and PAHO to train a cadre of public health communicators. Working with these counterparts, CDC will assist them develop comprehensive communications plans for all priority health programs and the Ministry of Health as a whole. These plans will identify target audiences and the most appropriate means of communicating health information to them. All media will be considered, including print bases, electronic transmission and internet as feasible and appropriate. Communications being key to action, training in writing, advocacy, dealing with the media and communications management will also be provided to the cadre and to other technicians directly responsible for generating data or program management.

DDM projects have successfully taken the analytic skills of epidemiology training programs, combined with communications and managerial skills, to improve the use of scientific information at the district level. DDM has also taken the scientific base of knowledge of subject matter experts at CDC and translated it into manuals and guidelines which assist Ministries of Health in preparing for and responding to epidemics. The DDM materials developed for meningococcal meningitis and cholera have been translated into several languages and have been used by CDC, WHO and Ministries of Health in numerous countries. The approach used in these manuals - defining roles and responsibilities, preparing for an epidemic, building capacity to detect, confirm and respond - are being applied to other diseases and systems.

Under this project, DDM will work with each country to:

- determine their information needs as determined by health priorities (health indicators)
- review sources of information - pre and post hurricane
- identify and address information gaps (whether they are due to poor design, hurricane damage or implementation problems)
- select at least one health program whose information system will be targeted and substantively changed by the inputs of the information system improvements.
- identify and address training and other needs at central or lower level for analyzing, interpreting and disseminating data to decision-makers
- identify and address information, training, support and other needs at all levels for using data to anticipate outbreaks, investigate outbreaks, respond to outbreaks, allocate resources, set priorities and manage programs.
- evaluate the use of Health Information Systems data using qualitative and quantitative approaches

Based upon the priorities set by each country, DDM will also work with the MOHs to develop data-based strategies to prevent and / or control 1-3 health problems in each. Program plans will be developed to implement scientifically sound approaches that may 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 and mortality will be monitored by the MOH for future adjustments in the programs. This is further addressed under IR 4.

Because there is ease of movement between the target countries, they share many common health problems and transmission of disease across countries may pose a problem. This phenomenon has been described as the "epidemiologic corridor". A regional workshop will be held in Year One (either in collaboration with PAHO or another regional body). At the workshop, participants will:

- identify diseases and conditions of a regional importance; the information system of each country will be designed / modified to allow extraction of this information for dissemination to other nearby countries;
- determine effective communications strategies for information sharing;

- discuss the need for and form of regional response capability for public health emergencies.
- DDM will work with regional counterparts to develop maps of these health problems and of risk factors that contribute to transmission. DDM will provide technical assistance to the development of a dissemination strategies and regional response capability. Annual meetings will be held to review progress and revise strategies as well as to review the information generated by the system and recommend regional strategies for prevention and control.

The FETPs that are to be established in the region will serve as an important resource to this IR. The faculty of the FETP can also serve as faculty on DDM workshops and provide supportive supervision to DDM participants. Traditionally, FETP has only provided training in epidemiology and communications. Increasingly, DDM modules on economics and program planning and health project management are being incorporated into the curriculum. DDM has helped in faculty development for these modules. FETP staff and trainees will be involved to the maximum extent possible (depends upon timing of recruitment) in the reviews of existing health information systems and the design of improvements. They, as well as graduates, will be essential resources for outbreak investigations during the project and after. Districts can do the initial investigation, but in-depth investigations, as well as outbreaks of uncommon diseases, will require assistance from FETPs. The manual and guidelines will be developed in close collaboration with the faculty and staff.

Depending upon the placement of the FETP within the host Ministries of Health, they may have responsibility for the notifiable disease system, other parts of the HIS and / or the bulletin. Whether or not they are directly responsible, this IR will be accomplished in close collaboration with them.

The public health Early Warning System (EWS) is envisioned as an electronic network that would link public health, medical, emergency and other organizations critical to health protection. The EWS plan to be developed is expected to provide a model the Ministries of Health can use or adapt in building the electronic infrastructure necessary to improve local and regional linkages, health surveillance support, detection of emergent health threats, emergency notification and communications, and coordinated response to health threats.

A model EWS plan will be developed to present to all five countries. There will be two phases in the development of this plan First, an assessment, resulting in an assessment report, will be completed by the end of the first six months. Second, the EWS plan will be developed and delivered by the end of year one. The EWS plan will be tiered based on capacity level, will include a suggested course for implementation, as well as a blueprint for the development of electronic telecommunications capacity for each tier, and would be suitable for modification to address each Ministry's needs. The Ministries of Health will be responsible for the implementation of the EWS plan.

COORDINATION

DDM was invited by the USAID missions in Honduras and Nicaragua to assess the health information systems in those countries. In close collaboration with the Ministries of Health in each and in coordination with PAHO, proposals were developed for each. This same consultative approach will be employed in the development of plans for each country, as well as intra-country and regional activities.

In part, coordination will be accomplished by the Ministries of Health with CDC support. It is recommended that Advisory Committees be established / revitalized for decisions regarding the health information system. These Committees typically include representatives from various programs within the MOH, from other Ministries such as Agriculture (food production) or the Interior (vital registration), the private sector, donor agencies and implementing partners.

Other recommended Committees are the Epidemic Preparedness Committee, which includes many of the members mentioned above and the Early Warning System Advisory Committee.

Challenges to the 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, and, 3) the financial and technical capacity of the Ministries of Health to implement the early warning system following completion of CDC's contribution to preparing the plan.

MANAGEMENT PLAN

The health information and surveillance system activities will be implemented jointly with the Field Epidemiology Training Program and IR4 by the Division of International Health /EPO. The project team will include representatives of DIH/EPO, the Division of Public Health Surveillance and Informatics/EPO, the Public Health Practice Program Office, NCID, National Center for Health Statistics, National Center for Environmental Health, and the Public Health Program Office, as the need for subject matter expertise is identified. The General Directorate of Epidemiology of the Secretariat of Health, Mexico has expressed interest in continuing as partners in the implementation of the project and terms of reference are to be drawn up in mid-May, 1999.

TEPHINET, the consortium of FETPs (based in Atlanta and Geneva), can offer coordination with Mexico and other FETPs in the region and elsewhere. Through TEPHINET collaboration with Peru, Spain, Colombia are already being discussed. Through a cooperative agreement with CDC, TEPHINET can therefore offer assistance in the evaluation of surveillance systems, development and implementation of training programs, evaluation of 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.

Developing a plan for a health Early Warning System will be led by the Public Health Practice Program Office, working in close collaboration with EPO, NCID, PAHO and the participating Ministries of Health.

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.

- Health Information advisory committee and Early Warning System advisory committee composed of decision-makers, program managers, representatives of donor organizations, data users and providers from all levels of the health care system
- Point person for work on the systems. This should be a full-time person available to do or coordinate the evaluation, meetings of the committee, input from CDC / TEPHINET, trainings etc.
- Technical Coordinator to assure oversight of the work and coordination with other areas in the MOH, other Ministries, donors and other sectors
- Communications specialist / editor for planning and implementation of epidemiological publications and editorial committee
- Epidemic committees at national, regional and local levels - this would be a multisectorial committee responsible for coordinating the response to suspected epidemics, evaluating preparedness, coordinating preparedness and response with donor organizations, NGOs and various government agencies
- The Ministries of Health will have to establish line items in national, regional and local budgets for the costs of routine surveillance, supervision of surveillance and outbreak investigations. This may be phased in over the life of the project (2 years)

RESOURCES REQUIREMENTS

The budget for this activity follows in annex 2. The USAID mission in Honduras has put $122,000 toward this effort in their country in FY99. This was taken into account in the preparation of the budget and does not appear here.

INTERMEDIATE RESULT 2: INCREASED AVAILABILITY OF EPIDEMIOLOGISTS IN THE REGION AND THE TRAINING OF OTHER LEVELS OF HEALTH WORKERS BY THESE EPIDEMIOLOGISTS

STATEMENT OF THE PROBLEM

In the wake of the Hurricanes George and Mitch, the national Ministries of Health found themselves without an adequate information base and without the skills necessary to identify and control epidemics. The Ministries were and remain unprepared to handle these complex emergencies without outside assistance from international agencies

CDC has collaborated with Ministries of Health throughout the world to develop Field Epidemiology Training Programs (FETP) and Public Health Schools Without Walls (PHSWOW). These programs have 20 years experience in building high-quality epidemiologic capacity in 21 countries and have recently organized a coordinating organization called TEPHINET (Training in Epidemiology and Public Health Interventions NETwork). A key factor in the FETP and DDM programs is the sustainability and capacity that is left with the country, thus preparing the MOH to handle emergencies on their own in the future. Currently 17 of these programs are autonomous within their Ministries of Health have sustained funding. This technical assistance and collaboration has varied greatly depending on local need.

The FETPs and TEPHINET have been successful in developing and promoting excellent scientific epidemiology, creating public health practitioners with a field-based approach. The ability of FETPs and their graduates to respond quickly to infectious and environmental health threats makes them an important part of a Ministries public health team. For the long-term, in the event of an emergency, a regional cadre of FETP trained epidemiologists could be on-site within hours, fully capable and trained to rapidly define the threat and program appropriate response. This is in contrast to international teams that may take a minimum of 24 hours and are not in a position to follow-up the recommendations of the investigations.

FETPs and their graduates also help Ministries develop the information necessary to develop and implement the most effective and cost-effective public health programs to address on-going health problems. They develop, maintain and evaluate health information systems that provide the information necessary to prepare for and respond to health problems. This is particularly important as countries in the Americas undergo the epidemiologic transition and increasingly need to plan broad-based health programs and include chronic and environmental health problems as priorities.

The Division of International Health, in collaboration with TEPHINET, estimates that highly qualified field epidemiologists are in greatest need at the regional and national levels of Ministries of Health. National or regional epidemiologists can act as technical advisors to program managers, they can be on hand to analyze disease trends, provide advice and assistance to districts and program managers and be available to respond rapidly to emergencies. To operate effectively, a Ministry should plan to have one epidemiologist in each region (or unit above district-level), as well as epidemiologists available to each vertical program, and the unit(s) responsible for disease surveillance, epidemic response, planning and evaluation. Based upon these assumptions, CDC estimates a need for 80 epidemiologists for the 5 target countries (Honduras, Nicaragua, Guatemala, El Salvador, Dominican Republic). The countries of Haiti and Costa Rica were not part of the initial assessments and will be considered later. This number will be refined during assessment visits to the region. The exact number needed and the number currently on staff will be clarified with the Ministries of Health. Included in the count of those available might be those employed in other sectors such as Universities, who could be considered as national resources. A comprehensive training plan will be developed that accounts for the additional epidemiologists needed to meet attrition (as staff are promoted to higher

functional levels in ministries), to provide continuing education and to develop supervisory capacity.

RESULTS FRAMEWORK

The following results are proposed to help achieve the Strategic Objective of "Re-establish and sustain the capacity for early detection, diagnosis and effective response to outbreaks of emerging and re-emerging infectious diseases".

Result 2.1 - A cadre of 38 field epidemiologists will be available for assignment to national and regional level posts within the Ministries of Health

Indicators

- 35-38 epidemiologists completed the FETP training (completed competencies established by programs[1])

Activities (illustrative)

- Establish 1-2 FETPs in host countries
- Sponsor FETP trainees from target countries to FETP programs in Canada, the United States, Mexico, Colombia, Peru, Spain and Cote d'Ivoire
- Identify field sites for trainees, conduct training of field supervisors
- Review / modify curriculum and training materials with MOH
- Recruit first class of trainees
- Initiate training program

Result 2.2 - Establish sustainable capacity to conduct field epidemiology training

Indicators

- host MOH established funding for program
- protocols for cooperation and cost sharing established with other target countries
- continued recruitment beyond second year of the project
- counterparts recruited from countries
- supervisors (1 per 8 trainees) selected, trained; monitoring systems for supervisors defined and in place
- number of FETP graduates retained by MOH and / or remaining in the region
- FETP graduates using epidemiology in their positions e.g. conducting annual surveillance reviews, outbreak investigations, program evaluations.

Activities (illustrative)

- Define career path of trainees and competency needs per future career responsibilities
- Identify and train counterpart FETP Directors
- Identify and train faculty for courses (as necessary)

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1 This will be an adaptation of the competencies described in Annex 2

- Design curriculum and materials to meet competency gaps
- Develop plan for cost recovery (national budget, tuition, external support)
- Establish mechanisms for accepting trainees from other countries and agreements with Ministries of surrounding countries

Result 2.3 - Establish ongoing training in core public health skills by FETP staff, graduates and trainees for key health personnel to strengthen epidemiology at the local level (see 1.3)

Indicators

- FETP staff, graduates and trainees providing training for 50-100 outlying MOH staff in basic public health skills (including maintaining surveillance systems)
- short-courses to strengthen municipal epidemiological capacity conducted by FETPs
- Timeliness and accuracy of reporting in targeted outlying municipalities improved

Activities (illustrative)

- Assess necessary skills (and gaps) for public health and epidemiology for public health workers
- Adapt short-course curriculum and materials from exisiting DDM materials and other FETP's
- Provide training for FETP staff, graduates and trainees on teaching methodology and materials development
- Recruit appropriate public and private sector personnel for training with MOH in countries
- Provide training courses for MOH staff

The indicators above will be monitored by CDC and reported to USAID. In addition to these indicators, a number of targets and process indicators such as training sessions held, MOH and other personnel trained, will be developed at a later date.

APPROACHES TO BE USED

The flagship training of the Field Epidemiology Training Program produces high-level field epidemiologists able to perform the skills listed in Annex 2.

The strategy for applied epidemiology training starts with classroom didactic training that is provided in scheduled blocks to build necessary skills. Time is provided for peer review and presentations, and to strengthen networks of epidemiologists within and across countries. Typically, a class (cohort) starts with a 3-4 week introductory course in basic epidemiology, biostatistics, communication, management, and an introduction to surveillance systems and field investigations. Trainees then join their field sites where they work with supervision. During the 2-year training, 60-70% of the time is spent in the applied field training. Participants must evaluate a surveillance system, investigate an outbreak, undertake field studies, communicate to an audience of decision-makers and demonstrate that some of their recommendations have been

adopted. The need for these tasks is carefully coordinated with the Ministry of Health such that the trainee is fulfilling an identified need even during their training.

In the case of the Central American FETPs, the trainees will be coming from the host countries, but also from 3-5 additional countries. It is important that trainees return to their own countries and perform learning activities that are of service to their own Ministries. At the same time, close supervision must be available to assure the quality of the learning experience. Early in the project, field supervisors from all 5-target countries will be identified and trained. They will receive technical backstopping from the in-country CDC staff for the duration of the project. Supervision of trainees will be further reinforced by regular visits to all countries by FETP staff and bi-annual meetings of trainees, staff, and field supervisors in the region. Ministries will be consulted regularly and given ample opportunity to provide feedback, both on an on-going basis and during the annual meetings.

Faculty, staff, field supervisors and resources will be drawn from the following in order of preference: expertise from the country, expertise from another country in the region, expertise from a TEPHINET country in the region (Mexico, Colombia, Peru, Canada, USA), CDC. The mechanisms for coordinating this are described in other sections.

In addition to the full training for field epidemiologists, Ministries typically need to improve the abilities of their staff to collect, analyze and use information on an ongoing basis. These needs are typically addressed through shorter courses that can be offered by the faculty of an FETP, often with FETP trainees serving as faculty for these workshops. It is anticipated that the need for these programs will be identified and addressed in conjunction with the DDM portion of the project (IR 1).

The first step in the development of a Central American FETP capacity would be an assessment visit to the affected countries. An FETP represents a significant on-going commitment on the part of a Ministry of Health. During the initial years of a program, the MOH devotes time from full time staff as faculty and staff. Qualified staff and the infrastructure must be identified. The Ministry of Health must continue to pay trainees their full salary during the 2-year program. It must defined a logical career path and provide some assurance that graduates will have the opportunity to exercise their acquired skills. Plans have to be made to assure that when external support ceases, the programs can continue. This requires commitment from the host country to pay for salaries for trainees and trainers, and ancillary costs such as computers for trainees and costs for outbreak investigations. To date the majority of CDC FETP programs continue to function as sustainable national programs. In addition, this is envisaged as a regional program, serving the needs not only of the host country, but accepting trainees from surrounding nations, implying financial contribution and commitment from non-host countries.

Since the early 1990's CDC has been in contact with staff from the Ministries of Health of Dominican Republic, Guatemala, Nicaragua, and Honduras to assist in the development of increased epidemiologic capacity. In 1994, CDC had held discussions with several programs in the region and developed plans for an FETP program based in INCAP in Guatemala, funded by