

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

PD-AAJ-137

Report Symbol U-447

1. PROJECT TITLE Epidemiological Surveillance and Training	2. PROJECT NUMBER 538-0027	3. MISSION/AID/W OFFICE RDO/C
4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 538-81-04 <input type="checkbox"/> REGULAR EVALUATION <input type="checkbox"/> SPECIAL EVALUATION		
5. KEY PROJECT IMPLEMENTATION DATES A. First PRO-AG or Equivalent FY <u>80</u> B. Final Obligation Expected FY <u>82</u> C. Final Input Delivery FY <u>82</u>	6. ESTIMATED PROJECT FUNDING A. Total \$ <u>1,579,000</u> B. U.S. \$ <u>1,160,000</u>	7. PERIOD COVERED BY EVALUATION From (month/yr.) To (month/yr.) <u>February, 1981</u> Date of Evaluation Review <u>Jan. 25-Feb. 5, 1981</u>

B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., dirgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Re-allocation of existing under-utilized project funds to provide minor additional equipment, laboratory supplies and additional travel funds for on-site follow-up by CAREC staff.	Mark Laskin	April 1981
2. Emphasis on expanded program for immunization management, self audit and outbreak/problem recognition investigation.	CAREC	N/A
3. Increasing involvement of CAREC in training of Public Health Nurses and Public Health Inspectors.	CAREC	N/A
4. Medical Epidemiologist Traineeships, Medical Student Clerkships are undersubscribed due to lack of candidates. Also there is an overall deficiency in trained staff. Transfer clerkship and traineeship funds to additional on-site follow-up funding for higher in-country visibility.	Mark Laskin CAREC	March, 1981
5. Specific written objectives and evaluation plans need to be developed for each surveillance laboratory training assistance course.	CAREC	April - October, 1981
Mid Term Evaluation coordinated January 26 - February 5, 1981 is attached and forms Part II of this PES.		

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS <input type="checkbox"/> Project Paper <input type="checkbox"/> Implementation Plan & G., CPI Network <input checked="" type="checkbox"/> Other (Specify) <u>Implementation Letter</u> <input type="checkbox"/> Financial Plan <input type="checkbox"/> PIO/T <input type="checkbox"/> Logical Framework <input type="checkbox"/> PIO/C <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Project Agreement <input type="checkbox"/> PIO/P	10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT A. <input checked="" type="checkbox"/> Continue Project Without Change B. <input type="checkbox"/> Change Project Design and/or <input type="checkbox"/> Change Implementation Plan C. <input type="checkbox"/> Discontinue Project
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11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE. (Names and Titles) Dr. David Bassett, CAREC (SUBS) Darwin Clarke, SPS Dr. Patrick Hamilton, CAREC (SUB) Fitzgerald Louisy, Per. Sec. (SUBS) St. Lucia	12. Mission/AID/W Office Director Approval Signature <u>[Signature]</u> Typed Name <u>Dwight B. Johnson</u> Acting Director, AID
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MID TERM EVALUATION
EPIDEMIOLOGICAL SURVEILLANCE AND TRAINING
JANUARY 26 - FEBRUARY 5, 1981

Implementing Agency (CAREC)

Caribbean Epidemiology Centre
Port of Spain
Trinidad

Funding Agency (USAID)

USAID
Caribbean Regional Office
Bridgetown, Barbados

Project 538-0027

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I. Introduction

The Epidemiology Surveillance and Training Project (538-0027) is a three year AID assistance project for all AID eligible CAREC member countries whose purpose is to "improve the health status of Caribbean Populations through a reduction in the incidence and prevalence of communicable infectious diseases". Details of the Project (Project 538-0027; Approved May 4, 1979) are contained in the Project Paper. The Caribbean Epidemiology Center (CAREC), a regional center of the Pan American Health Organization/WHO, is the implementing agent.

As of January 31, 1981, 17 of 36 months of project operation had been completed. In accordance with the evaluation plan a mid-term evaluation was carried out between January 25, 1981 and February 5, 1981. The objectives of the evaluation were:

1. To measure progress towards program objectives.
2. To identify problems, solution of which would contribute towards achieving objectives.
3. To identify alternative or new directions which might be implemented during the final 19 months of the Project.
4. To identify areas for future AID assistance in disease contro

II. Evaluation Methods

- A. A seven member team, including representatives of CAREC member countries' Ministries of Health (1) AID; (1) the Centers for Disease Control (3) (CDC); and CAREC staff (2) carried out the evaluation.
- B. Project documents, including the Project Paper, Project Reports, Fiscal Summaries, Epidemic Investigation Reports and Consultations, were reviewed in detail both at CAREC in Trinidad and at RDO/C, Barbados.
- C. A Project Status Report prepared by CAREC indicating project status by activity was reviewed and is attached. (Appendix I).
- D. Field questionnaires (Appendix II) aimed at determining the impact of training on performance were developed, reviewed, and revised for the following individuals:

Designated Epidemiologist

Deputy Epidemiologist

Surveillance Statistical Officer

Laboratory Director

Person responsible for central stores of vaccine

Expanded Program on Immunization Coordinator

- E. Using the field questionnaires, 2-3 person teams visited six countries (January 28 - March 2, 1981)

Antigua/St. Kitts: J. Koplan, CDC; M. Laskin, RDO/C.

Barbados: J. Koplan, CDC; S. Foster, CDC; T. Hawkins, CDC.

Dominica/St. Lucia: T. Hawkins, CDC; P. Diggory, CAREC.

St. Vincent: S. Foster, CDC; D. Bassett, CAREC;
R. Narine, CAREC

- F. For each activity results, conclusions, and recommendations were developed.
- G. A draft paper was reviewed by AID Project Review Committee and the Director of CAREC.

III. Results

A. Project Element Achievement

- 1. 21 of 24 project elements are now on target (Appendix I).
- 2. Medical Epidemiologist Traineeships and Medical Student Clerkships are undersubscribed due to lack of candidates.
- 3. Computer use has been delayed due to late delivery and electrical problems.

B. Financial

- 1. As of December 30, 1980 US\$30,257,437 of an estimated US\$500,000 budgeted had been expended. (Appendix III).
- 2. Expenditure rate for the quarter ending June, September, and December 1980 averaged \$68,000 versus a projected \$100,000.

Note: Difference between budget and expenditure is largely due to delayed billing. Of funds budgeted for year II an estimated \$40,000 is not expected to be obligated. Based on current evaluation following reallocations have been proposed.

- 1. Additional Audio-visual materials 12,000
- 2. 2 Additional Microbiologic hoods and
2 Microscopes 5,000

- 3. Additional Laboratory Supplies 4,000
- 4. Training and overlap for new CAREC Epidemiologist 5,000
- 5. Additional onsite visits laboratory/ surveillance by CAREC staff 10,000

C. Surveillance Training

The training program supported by the AID Grant has developed in the following manner. A training unit has been established at CAREC under the direction of a training officer who is a West Indian national with a doctorate in education and extensive experience in education. He has organized the training program for both CAREC based and in-country training, with courses in epidemiology, public health and microbiology (see Appendix VI). An audiovisual artist technician was appointed at the end of Year I and is working in the training center, developing graphic, tabular, photographic and pictorial materials. A training secretary was appointed at the beginning of Year I. During Year I of the grant, \$6,000 was spent on audiovisual materials.

Surveillance training courses and workshops have been conducted for several types of public health professionals.

Traineeships in Surveillance: A Medical Officer of Health (MOH) from Guyana was trained for one month in epidemiology and has returned to function as a national epidemiologist. A lecturer from the University of the West Indies received a short traineeship in epidemiology. Six deputy epidemiologists were trained at CAREC under the AID Grant for 4 weeks and have returned to their countries to assist the national epidemiologists in surveillance and epidemiologic activities. Proposed training for medical epidemiologists was for 6 persons for 3-4 months each. However, only one country has availed itself of this opportunity and unspent funds are available from these traineeships for reprogramming. (see III B above).

A biostatistical trainee (a West Indian national), was appointed in September, 1980 and is fully participating in surveillance and statistical activities. Although provision was made for medical student clerkships at CAREC and much promotion for this clerkship made at the University of the West Indies, as of now, no students have availed themselves of this opportunity leaving \$9,680 unspent.

Surveillance training courses have been given for designated epidemiologists, surveillance statistical officers (SSO's) and Expanded Program on Immunization (EPI) national staff. A workshop for 25 designated epidemiologists was held in May of 1980, providing information on yellow fever and interchanges on post-disaster surveillance. The next workshop for designated epidemiologists is scheduled for 1981. A workshop was given for SSO's in April, 1980 and another is scheduled for later in 1981. Eleven sessions of in-country surveillance training have been given for public health nurses, public health inspectors and medical officers of health in eight countries.

Epidemic investigation supplies have been purchased and delivered; including containers for blood and stool specimen collection, media, blood drawing equipment, etc. A computer was ordered and funds obligated in Year I and delivered during Year II.

Survey of Surveillance Activity in Six Countries:

Information on surveillance, epidemiology and statistics is based on interviews with designated epidemiologists, deputy epidemiologists and surveillance statistical officers (SSO's) It should be noted that one of the 6 participating countries has identified a deputy epidemiologist but that person is not trained (scheduled for September, 1981) nor functioning in this role yet. Four out of the 6 countries have had new Chief Medical Officers appointed since the A.I.D. grant was initiated. Three have also had new designated epidemiologists appointed since the grant was initiated.

<u>Grant Supported</u>	<u>Number</u>	<u>Percent</u>	<u>Comments</u>
General: Staff sent to CAREC for training	6	100	Considered very useful
Receive CAREC's Surveillance Report	6	100	Considered very useful
Have public health reference library	3	50	Desire annotated bibliography and assistance in purchasing
Called on CAREC for assistance/consultants	6	100	From 1-20 times problem include fish poisoning malaria, typhoid and disasters
Number of outbreak investigations in each country	-	-	(or 6 countries: 0,1,1,2,3,50)
Role of designated epidemiologists			
-coordinator	4	80	
-field investigator	1	20	
Countries with problems not investigated that staff felt should have been investigated	5	83	-3 identified by epidemiologist and 2 by deputy -rubella, VD, leptospirosis, measles and gastroenteritis (95 cases, 3 deaths)
Availability of prepared disease questionnaires	5	83	Types of forms ranged from 1-10. One country uses one all-purpose investigation form

<u>Grant Supported</u>	<u>Number</u>	<u>Percent</u>	<u>Comments</u>
Typhoid registers existing and used	3	50	
Investigative supplies -readily available	0	0	
-in hospital, lab, etc.	4	67	
-not available	2	33	
Outbreak written reports available	4	67	
-quality: good	2	50	One of these a full and thorough investigator
fair	1	25	-No information on symptoms, case definition, line listening
poor	1	25	-No information on symptoms, case definition, line listening, etc.
-CAREC informed	3	75	The fourth was a TB case investigation and not necessary to inform CAREC
-Timeliness:			
rapid response	1	33	Notification and response were same day
slow response	2	67	Intervals: 8 days from first case to notification then 7 more days till response, 5 days from first case to notification then 15 more days to response

Surveillance

Epidemiologist meets with lab director regularly	5	83
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<u>Grant Supported</u>	<u>Number</u>	<u>Percent</u>	<u>Comments</u>
Health information for international travel passed on to public	6	100	via airlines, travel agents and airport health facilities
Graphic epidemiology material on wall of:			
-designated epidemiologist	1	17	
-deputy epidemiologist	2	33	
Designated Epidemiologist in position during AID grant	3	50	
-attended CAREC workshops	3	100	
-found them useful	3	100	
-followed up by in-service training at home	3	83	Presentations on cholera immunization
Deputy Epidemiologist in office during AID grant:	5	83	3 trained by AID grant, 1 more schedule to be trained.
-attended CAREC workshop	5	100	
-found them useful	5	100	
-followed up by in-service training	3	60	
Training of Deputy Epidemiologists:			
-designated epidemiologists view as satisfactory training	5	100	
-deputy epidemiologist satisfied with his/her own training	5	100	
-added responsibilities	5	100	
-career affected favourably	5	100	need relief from other duties and salary adjustment
-quality of work improved	5	100	
-type of work changed	5	100	more investigations and teaching
Statistics: SSO countries with SSO	6	100	
SSOs interviewed	5	83	-and one assistant was interviewed -average length of service is over 10 years

<u>Grant Supported</u>	<u>Number</u>	<u>Percent</u>	<u>Comments</u>
Other Duties in addition to Statistics:	3	50	family planning accounting and supervision
SSO attended CAREC workshops	5	83	
-found it useful	5	100	
-used it for in-service training in home country	4	80	
Had "in country" CAREC training	3	50	all found it useful and desirable
Submission of last surveillance report to CAREC			
-week submitted within 2 weeks	4	67	
-week submitted within 4 weeks	2	33	
Keeping record of number of reporting units	5	83	Percent reporting was 30, 45, 55 and 75% with 2 not recorded
SSO's chart data; create graphs	2	33	
SSO's discuss results with epidemiologist	6	100	
System created to alert epidemiologist if unusual data	5	83	
SSO visits reporting units	3	50	
Equipment needs:			
typewriter	2	30	
copier	4	67	
paper	1	17	
fining cabinets	2	33	

Conclusions

Major improvements have been made in surveillance and epidemiology in the Caribbean region through CAREC efforts. In particular, there has been the creation of defined respon-

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sibilities and positions for epidemiology. Each country now has an individual with primary responsibility for epidemiological matters (the designated epidemiologist) and for statistics (the SSO). In addition, a whole new level of personnel has been created, in the position of "deputy epidemiologist". CAREC stimulated the creation of these positions and provided training and support for the individuals who fill them. The deputy epidemiologists are experienced senior public health inspectors or nurses who do routine surveillance activities, disease outbreak investigations, etc. The deputy epidemiologists have no clinical commitment, are geographically stable, (i.e. unlikely to migrate) and practice public health out of interest and career choice. They are stimulated and enthusiastic about epidemiology and disease prevention and control.

CAREC workshops and training are considered useful and all personnel attend regularly. The CAREC Surveillance Report has constantly enlarged its circulation, is distributed widely in the Caribbean Health Community, is saved for reference, quoted in the international medical literature and eagerly awaited by its subscribers. Its subject matter is of interest and use to health workers in the West Indies.

Areas that will require further improvement are outbreak/problem recognition investigation, and control. This will require considerably improved disease reporting in terms of improved reporting at the local level and increase in completeness of reporting.

Priority problems should be identified and control measures formulated and implemented, e.g. food borne illness and sanitation, gastroenteritis and oral rehydration, water-borne illness and water testing, etc.

E. EPI

Central Cold Chain Evaluation in Six Countries

	<u>Number</u>	<u>Percent</u>
Number of countries with central cold storage temperature monitored:	1	17
Number of countries with temperature in safe range:	4	67
Number of countries with back up plan for electricity failure	3	50
Number of countries with vaccine inventory kept by date of expiration (5) (1 unknown inventory).	2	40
All vaccine in date	5	83

Immunization Management in Six Countries

Target known	2	33
Estimated Coverage Available 1979 (1)		
1980 (1)	2	33

Observations:

Although most EPI staff have had formal EPI training, central management including monitoring and recording of central cold chain temperatures, maintenance of a vaccine inventory, knowledge of correct age for immunization, knowledge of number target population, knowledge of estimated coverage was only documented in a minority of countries (see table above). Although further detailed investigation would probably have uncovered more data (e.g. number of immunization in statistics) a high priority need is for further field visits of CAREC EPI staff to work with EPI managers to improve program management.

In the one country in which district health units were checked - only 2 of 6 had refrigerators, and only 1 had a safe temperature.

Recommendation

1. Circulate immediately a self audit for EPI central management to identify priority areas for attention. (Appendix V).

- 2. Supply through AID Grant if necessary, a thermometer or temperature measuring device to every refrigerator holding device.
- 3. Supply to each cold chain unit a year-long chart for recording temperature.
- 4. As reported, immunization coverage estimated by service statistics (see 1979 Graph, Appendix IV) may be significantly lower than the actual level. Sample survey coverage assessment should be done in at least four (4) countries to measure current vaccine coverage.
- 5. Schedule at least 1 week of EPI Management Training/Evaluation/Supervision in each country during 1981 (Additional short term assistance may be needed from (PAHO) (AID/CDC) for this activity.

Management evaluation using standard format;

Pre-training in central cold chain management/vaccine inventory;

One 2 day training session for professional personnel physicians and nurses;

Field visit to at least three field units to supervise and train in supervisory techniques.

- 6. Priority attention should be focused on investigating outbreaks of disease in vaccination areas to document current levels of vaccine effectiveness (measles, pertossis).

IV. CAREC as a Regional Institution:

CAREC was established by PAHO/WHO in January 1975 at the request of 18 English-speaking countries who recognized the need for a sub-regional center for surveillance, laboratory referral, training and operational research. These eighteen countries later joined by Dutch-speaking Suriname pay direct quotas to provide partial support for the operation of the Center, the remainder of the funding of the core budget coming from PAHO/WHO's regular funds and the United Kindgom (O.D.A.).

At the outset, it was agreed with each country that CAREC could have direct contact with key national counterparts, in particular the national epidemiologist and laboratory director. Over the following years this arrangement has developed such that by 1980 telephone consultantions had become a major facet of the center's services. This trend reflects the effect of the center's training programs so that the countries are becoming more self-sufficient and for example can handle many epidemic investigations without recourse to field assistance from CAREC. The Center has become the Caribbean's focal point for the interchange of international surveillance information and keeps all national epidemiologists informed through the monthly publication of the CAREC surveillance report and by

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The cost-effectiveness of a centralised virology service is recognized by all the participating countries who use CAREC as a referral laboratory. In addition, CAREC provides a reference laboratory service for bacteriology, parasitology and entomology as well as conducting polio antibody sero-surveys and parasite surveys. The shared service concept embodied by CAREC is an excellent example of inter-regional.

Eighteen countries participate in the proficiency testing programs (bacteriology and parasitology) conducted by the Center. The weaknesses revealed by this program are used as guidelines for the annual microbiology courses conducted at the Center, as well as the "on the bench training" conducted to meet specific needs.

Since 1975 the Caribbean Health Ministers in their annual conference have reaffirmed the need for the Center and its services, have commended it for the excellence of its activities, and have pledged them continuing support as an example of successful regionalism.

FUTURE DIRECTIONS

A. CAREC As a Regional Institution

All ministries visited expressed a very strong appreciation of and need for CAREC services. Their confidence in and use of CAREC is further confirmed by the 95% level of national contributions.

Although need for and use of CAREC services vary with individual country capability, all countries have a need for CAREC in one or more of the following: disease investigation and control, training (epidemiology, statistics, laboratory), laboratory reference-bacteriology, laboratory services-virology, technical assistance-epidemiology, EPI, laboratory.

Although the future of CAREC is beyond the scope of this evaluation, maintaining CAREC as a regional resource is essential.

B. Increasing West Indian Professional Personnel at CAREC

During the last year, significant progress has been made in recruiting West Indians for senior level positions. Further progress in this area requires a commitment to the Center and its activities beyond 1985.

C. Importance of CAREC to Industry and Development

The economic impact of disease and epidemics, in particular, can be major to West Indian countries. Diseases such as yellow fever, Dengue, Malaria, and Food Poisoning can cause considerable in some cases mortality, and suffering to all residents.

In addition, industry can be disrupted, tourism can suffer long term damage and all regional countries incur increased costs due to surveillance, quarantine and post health activities.

The importance of CAREC as a training and resource center to develop national capabilities to detect, (surveillance) confirm (laboratory) and respond appropriately to these disease outbreaks cannot be underestimated.

D. AID Surveillance Laboratory Training Assistance

1. Progress to Date

- a) Project activities (21-24) identified in implementation plan are on track.
- b) Initial training activities have been carried out in epidemiology and laboratory.
- c) Evaluation identified both significant progress and areas of deficiency.
- d) Although some deficiencies were generalized and can be corrected through region wide approaches, future improvement will in large part require specific country approaches to identify and correct deficiencies in organization, skill, and knowledge. This is especially true for the disease surveillance, epidemiologic services, and EPI.

2. Current Project Activities

Many CAREC activities, some AID funded some other funded are significantly contributed to achievement of Project Activities and should be continued include:

Surveillance

Epidemiology Training

Assistance in Epidemic Investigation (decreasing as national competence develops)

Phone consultation as Epidemic Investigation (increasing)

CAREC Epidemiology Bulletin

Special Epidemiology Studies

Laboratory

Laboratory Training

Laboratory Proficiency Testifying

References Services for Bacteriology and Parasitology

Laboratory Service for Virology

On-site consultation, training

EPI

Training

Equipment Supply

Supervision, Evaluation

3. Areas for Program Intensification

In two areas, surveillance and EPI, problems are country specific and require on-site evaluation, problem identification and solution. For each country, current activities need assessment and specific objectives and plans of action need to be developed.

- a) Frequency and duration of on-site visits;
- b) Training needs - at each level Central Ministry, Physicians, Nurses, Public Health Inspectors;
- c) Development of monitoring and supervisory system to measure progress toward pre-determined objectives.

4. Areas for Program Re-direction during months 19-36

- a) Now that most initial training has been completed, future training will need to be more specific to meet country needs within their capability in terms of interest, implementation, and support.
- b) Current training is being largely measured in terms of inputs. Although course objectives are in general well recognized no formal written course objectives or plan of evaluation were available with the training officer. Using the talents of the new training officer, and outside consultation if necessary, specific objectives and evaluation plans need to be developed for each training course.

Evaluation needs to measure impact of performance at country level.

- c) The major causes of morbidity and mortality in urban and rural children is gastroenteritis. Approaches to treatment are to a large part archaic and ineffective. New approaches in terms of nutritional counselling and oral rehydration not being in any of the countries visited. Whereas significant progress in oral rehydration treatment of diarrhea is being made in some countries, e.g. Jamaica, a major new initiative to train mothers in treatment of diarrhea is a high priority for the whole region.

D. LABORATORY

Project Sub-Purpose: - To increase CAREC capability to assist CAREC Member Countries (CMC's) in laboratory activities and to improve laboratory capability in the CMC's.

CAREC is currently assisting laboratories in CMC's by the following activities:

- a) Formal training courses.
- b) Organizing annual workshops for laboratory directors.
- c) Proficiency testing programs.
- d) Serving as a culture and specimen referral center.
- e) On-site training visits.
- f) Providing limited supplies in emergencies.

I. Formal Training Courses

Two general bacteriology courses and 1 malaria course was offered by CAREC since grant inception in October 1979. The topics covered included collection of specimens and laboratory procedure for infections of the urinary tract, genital tract, gastrointestinal tract, respiratory tract, central nervous system, and skin. Malaria work included thick and thin specimen preparation, staining techniques using Giemsa stain, and species diagnosis.

Survey of formal training courses (6 countries) - One space was offered to each country for each course for a total of 18 training opportunities: 16/18 were used. Fourteen of the 16 laboratory technicians trained are still in the country and in the same department.

a) Results of the Formal Training Course Survey

All of the laboratory personnel surveyed felt that they had benefited from the training. In general the improvements were in doing specific tests more accurately with some addition of new techniques. Some examples follow:

- i. All laboratories now use Thayer-Martin media to isolate Neisseria gonorrhoea. Identification of isolates range from the use of the oxidase test and Gram stain morphology in 1 laboratory, to valid identification by carbohydrate tests in 5 laboratories. One laboratory uses serological confirmation in addition.

- ii. All 6 laboratories offer anaerobic culture procedures but vary in capability. Only 1 of the 6 laboratories offers wholly satisfactory anaerobic culture procedures.
- iii. All 6 laboratories do satisfactorily-controlled antibiotic susceptibility testing (Kirby-Bauer or Joan Stokes).
- iv. There are obvious deficiencies in the quality control process of inhibitory media with only 4 of 6 laboratories even making an attempt at quality control.
- v. Four of the 6 laboratories use proper media for the isolation of Haemophilus. Five of the 6 would be able to confirm the identity of Haemophilus if isolated. One laboratory has the ability to serotype confirmed isolates.
- vi. None of the laboratories surveyed offers a beta lactamase test for rapid detection of penicillin or cephalothin resistant organisms.
- vii. Five of 6 laboratories surveyed do satisfactory presumptive identification test for Streptococcus pneumoniae and streptococci of Groups A, B, and D. One laboratory does a confirmatory serological procedure.
- viii. All 6 laboratories have good diagnostic procedures for detection of malaria parasites. Proficiency test specimens have currently been sent from CAREC to confirm this capability.
- ix. The constraints preventing utilization of laboratory procedures given in formal training courses are as follows:
 - Four of the 6 indicate a shortage of staff, e.g. No staff to prepare culture media and relieve the microbiologist of this task; other duties assigned to the microbiologist; etc.
 - Two of the 6 list financial constraints and 1 of these tends to run out of funds about 7 months into the calendar year.

- Two of the 6 list delays in obtaining supplies.
- Two of the 6 have equipment maintenance problems.

x. Five of the 6 laboratories surveyed do in-service training of their own laboratory staff members following the courses. The range is from 2-4 staff members receiving some in-service training.

xi. Requests for future training courses include mycology (2), more anaerobic bacteriology (2), foodborne disease (2), Campylobacter (1), Mycobacteriology (1), parasitology (1), 6 months bench training at CAREC (1).

b) Laboratory Directors Workshop

The 1980 workshop included training in leadership style, productivity workload management, and financial aspects of decision making regarding automation of laboratory tests.

Five of the 6 laboratory directors surveyed attended the workshop. The sixth laboratory director is a new appointee since the workshop. All of the attendees felt greatly benefitted by the management training. Some examples of expressed benefits include workload management, budgeting, stock control, general laboratory management, and preventative equipment maintenance.

c) Proficiency Testing

Each laboratory receives 3 laboratory and 3 parasitology distributions yearly from CAREC. The number of samples distributed on each occasion varies according to the nature of the material and the tasks required to be done.

All of the laboratories participated in proficiency testing. Only 1 laboratory did not test all samples, due to workload constraints. Two of the 6 laboratories do routine examination of the samples and 4 use special handling by senior personnel. All 6 report that the samples arrive in good condition and that they can correct any deficiencies in test results without special on-site visits by CAREC personnel.

d) CAREC Referral Service for Specimens and Cultures

All of the CMC's surveyed utilize CAREC's service as a reference center for specimens and cultures. Five of the 6 reported the system of transport via Liat to be trouble free; the

sixth had some difficulty getting one shipment accepted by the airline.

Increased national activity in the field of epidemiology and increased capability of national laboratories in the CMC's will lead to increased utilization of CAREC's virology services and referred services in bacteriology and parasitology.

II. On-Site Training Visits

The on-site training visits include bench training in microbiology techniques and cover problems in laboratory management. In the countries surveyed, the on-site visits have been well received and are considered to be very beneficial.

The on-site laboratory training visits also play a vital role in enabling CAREC to monitor the staffing position of these laboratories and initiate additional training activities to meet special needs. For example, prior to the grant period, one of the CMC's laboratories surveyed was offering a limited microbiology service of low proficiency. Staff changes have removed those technicians who received bacteriology training from CAREC and the improvements that have been made result from the recent appointment of an overseas trained Senior Technician. The advances made are precariously held, with an overall staff shortage and a marked deficiency in trained staff.

Although CAREC provides limited supplies in emergency situations, additional supplies were requested during the survey to improve laboratory capability.

1. Two laboratories requested additional anaerobic jars.
2. One requested Salmonella grouping sera.
3. One requested stock cultures for quality control.
4. One requested supplies for water bacteriology.

III. Current Status of Laboratories in Survey Countries

a) All 6 laboratories reported improved laboratory capabilities since October 1979. Five of the 6 felt that formal training courses and proficiency test samples were extremely helpful; 4 of the 6 stressed the value of on-site visits; and only 1 laboratory (due to staff changes) had no improvement due to any of the training methods.

b) Some of the improvement in laboratory capability noted included:

1. Doing routine laboratory procedures more accurately.
2. Initiating new laboratory procedures such as anaerobic cultures, additional tests for streptococcal identification, and additional enteric culture procedures.
3. One laboratory reported motivation of laboratory personnel by training courses as a major benefit and also increased training capacity of laboratory personnel.

IV. Conclusion:

Formal CAREC training courses have been well attended. Trainees have indicated that they are motivated to do better work following the courses and that the courses are very beneficial in updating information on specific laboratory techniques as well as in learning new laboratory procedures. In the area of updating current techniques, all of the laboratories surveyed have good procedures for detection of C. diphtheriae, Salmonella, Shigella, and malaria parasites. One example of a new culture media being utilized is that all 6 laboratories surveyed report using Thayer-Martin media for the isolation of N. gonorrhoeae with excellent culture results. Problem areas include a lack of good quality control on inhibitory media and slowness in initiating good anaerobic bacteriology laboratory procedures. There may also be a problem in culture techniques for H. influenzae based on current proficiency test samples although this was not readily apparent in surveying the laboratories. One new laboratory test, the beta lactamase test for detecting penicillin or cephalothin resistant organisms, has not been adopted as yet in any of the laboratories surveyed. This test was demonstrated, but not carried out by the trainees, during the bacteriology training courses. The in-service training of other staff members in laboratory techniques is a valuable adjunct to the formal training courses.

The yearly laboratory directors conference organized by the CAREC staff has also been well recieved by attendees. The laboratory directors indicated that the laboratory management training received in the 1980 meeting was very helpful in management of their workload, budgeting, maintaining stock supplies, and in general laboratory management.

The proficiency test program in bacteriology and parasitology serves both as a method to measure laboratory capability as well as a tool for additional training in good laboratory procedures. The test samples usually end up in the hands of senior laboratory personnel

so that the laboratory test results indicate the top level of achievement by a given laboratory. All 6 of the laboratories surveyed participate in the proficiency test program. Only 1 of the laboratories does not test all the samples and this was reported to be due to an excess workload.

All of the laboratory directors surveyed felt that their laboratories had improved in microbiology capability since October of 1979. One of the laboratories improved due to a change in the laboratory director and the remainder felt that the improvements were due to participation in a combination of formal training courses, proficiency test samples, and on-site visits by CAREC personnel. The improvements were generally in the area of doing routine procedures more accurately, initiating new laboratory procedures, and in motivating junior laboratory personnel. A number of the laboratory directors requested additional routine laboratory supplies from CAREC and supplies to initiate new procedures. Some of the future training course requests included courses in mycology, anaerobic bacteriology, Campylobacter, mycobacteriology, and parasitology.

V. Recommendations:

a) Formal courses will continue to be needed to update laboratory techniques in particular microbiology fields. The needs should continue to be identified either by on-site visits or by proficiency test results or by specific requests at the yearly laboratory directors workshop. When particular needs are shared by only a few of the CMC's laboratories, small courses may be conducted outside CAREC if appropriate facilities exist.

b) Small laboratories should receive 2 on-site visits per year from CAREC personnel; larger laboratories may require only 1 visit. The on-site visits should be scheduled without specific request since the on-site visit is perhaps the best training method available to the smaller laboratories.

c) Proficiency testing should continue in bacteriology and parasitology. CAREC's existing equipment could be employed to facilitate distribution of proficiency test samples in clinical chemistry at the cost of a 50% increase in the approximately \$900 yearly expenditure on proficiency test supplies. The preparation of tests would require collaboration with the better biochemistry laboratories in the CMC's. Even though clinical chemistry is not within CAREC's present area of responsibility, the activity would certainly benefit the CMC's laboratories at a minor cost. As a minimum CAREC should share it's proficiency testing experience with

other agencies (specifically UNDP, project 4201) to make clinical chemistry proficiency testing available to the CMC's laboratories.

d) The laboratory directors yearly workshops, apart from the benefit from management training, have done much to promote a spirit of cooperation between laboratories in the region. Currently, information is being collected by CAREC personnel on equipment maintenance methods. This is the necessary first step towards standardization and subsequent improvement in the equipment maintenance situation. It is most desirable that these workshops continue with appropriate scientific and managerial training input.

e) Even with improved laboratory management abilities, the CMC's laboratories cannot overcome all the problems regarding routine supplies since these may arise from administrative practices outside the laboratories themselves and commonly from shortage of funds. The lack of supplies frequently leads to a breakdown in routine microbiology service. An additional \$1800 reallocated to the sum budgeted for laboratory suppliers in the AID-CAREC grant for Epidemiological Surveillance and Training would enable CAREC to maintain the necessary supply assistance throughout the period of the grant.

II. On-Site Training Visits

The on-site training visits include bench training in microbiology techniques and cover problems in laboratory management. In the countries surveyed, the on-site visits have been well received and are considered to be very beneficial.

The on-site laboratory training visits also play a vital role in enabling CAREC to monitor the staffing position of these laboratories and initiate additional training activities to meet special needs. For example, prior to the grant period, one of the CMC's laboratories surveyed was offering a limited microbiology service of low proficiency. Staff changes have removed those technicians who received bacteriology training from CAREC and the improvements that have been made result from the recent appointment of an overseas trained Senior Technician. The advances made are precariously held, with an overall staff shortage and a marked deficiency in trained staff.

Although CAREC provides limited supplies in emergency situations, additional supplies were requested during the survey to improve laboratory capability.

1. Two laboratories requested additional anaerobic jars.
2. One requested Salmonella grouping sera.
3. One requested stock cultures for quality control.
4. One requested supplies for water bacteriology.

E. OPTIONS FOR FUTURE HEALTH ASSISTANCE

I. Now that a basic core of staff in epidemiology, statistics and laboratory have received training future training needs will be two:

- a) Continuing Education
 - Advance Training Course
 - Workshops
 - On-Site Visit

The interchange of information, experience, and future opportunities is essential to maintain morale and motivation for Deputy Epidemiologists and Laboratory Director.

- b) Training of Replacement Personnel

II. As to the basic goal of this project is the reduction of morbidity and mortality, new initiative, are needed to confirm and further define major causes of morbidity and mortality in this population group.

III. With the further definition of major causes of morbidity and mortality, it is important to detain through operational research feasible, affective means of disease preventive and control to major priority problems. In terms of current knowledge of disease epidemiology, the determination of effectiveness of oral rehydration in treatment of gastroentinitics and the feasibility of its use at the local level needs assessment.

IV. The future of health in many areas of the Caribbean will be dependent on the interaction of nurses with the community. Current impact on project activities on the very important implementers is limited. Extension of CAREC activities in terms of disease surveillance disease prevention and disease control is probably the single most important challenge of the 80s.

V. Patterns of disease in the Caribbean are changing. Non infectious diseases (accidents, diabetes, hypertension, and mental illness) are currently the major adult causes of mortality and morbidity. If CAREC is to meet the needs of its constituents, it will have to increasingly allocate resources to noncommunicable diseases.

Note: CAREC staff were included in the evaluation for the following reasons:

1. knowledge of program objective
2. knowledge of program operation
3. knowledge of program constancey .
4. Potential Implementation of Evaluation Fund

Above section on future direction reflects concensus of outside evaluators.

Status: 27th January, 1981.

USAID EPIDEMIOLOGICAL SURVEILLANCE AND TRAINING PROJECT -538-0027
PROPOSED IMPLEMENTATION SCHEDULE YEAR II 1 SEPTEMBER 1980 - 31 AUGUST 1981

<u>PROJECT ELEMENT</u>	<u>PROPOSED IMPLEMENTATION DATE/DETAILS</u>	<u>BUDGET AMOUNT</u>	<u>COMMENTS</u>	<u>DATE EXECUTED</u>
<u>NING TRAINING UNIT</u>	Dr. Abdool Hoosein			
a) Training Officer	Post filled throughout Year II.	40,500	Officer expected to take up duty at CAREC on two-year assignment on 1st August.	As scheduled.
b) Audio Visual Technician	Post filled throughout Year II. (Miss Ida Berahazar)	7,150	Recruited by September 1980.	Recruited December.
c) Training Secretary	Post filled throughout Year II. (Miss Judy Dyer)	7,150	Secretary was supported by grant through Year I.	As scheduled.
<u>CAREC TRAINEESHIPS</u>	Dr. Edgar London			
1) Medical Officer of Health Traineeships - six persons for 3 to 4 mths	One Medical Officer of Health from Guyana - September 1980.	2,500	Being prepared as national epidemiologist for Guyana. Decreased provision as M.O.H's will now be trained under II.3.	As scheduled.
2) Deputy Epidemiologists Training - six persons for four weeks.	2nd to 26th September, 1980 at CAREC! Candidates from: Jamaica, Bahamas, St. Lucia, BVI, Grenada, Guyana, Turks & Caicos	10,000	Allowance made for increased air fares.	As scheduled.
3) Medical Epidemiologists traineeships - six persons for 3 to 4 mths	6 Candidates anticipated:- Jamaica and Antigua have nominated candidates to start September 1980.	20,000	Modification from original proposal of long-term traineeships. This new proposal will provide cadre from West Indies, for staff development at Centre, and simultaneously reinforce national capacity. A vacancy will need to be filled by June 1981.	One only - Dr. W. Green, Dominica - 10 days.
4) Biostatistical Traineeship	(Yvette Holder) Trainee will start assignment at CAREC on 1st September, 1980.	15,290		As scheduled.
5) Laboratory Technician Traineeships - 7 persons for 2 weeks.	October 1980. Priority Malaria Diagnosis.	7,370	Need for malaria diagnostic capacity demonstrated by proficiency testing results.	Malaria one week course, as scheduled.
6) Medical Student Clerkships - 2 per year.	Candidates being selected after CAREC teaching assignments at the University of the West Indies, November 1980.	9,680		Much promotion No results.

PROJECT ELEMENT	PROPOSED IMPLEMENTATION DATE/DETAILS	BUDGET AMOUNT	COMMENTS	DATE EXECUTED
<u>TRAINING COURSES</u>				
A. <u>Surveillance Training</u>				
1. Designated Epidemiologist Workshop - 25 persons for 1 wk.	Last week in May 1981, at CAREC. 19 CAREC countries (CMC's) and French and Dutch Territories. AID to fund CMC's, except Trinidad, Bermuda & UWI	20,000	Increase to cover higher than originally anticipated per diem rate and air fares. Topic - Port Health	All invitations sent out.
2. Surveillance Statistical Officers Training - 9 persons for 3 days.	Last week of April 1981.	10,000	Increase to cover higher than originally anticipated per diem rate and air fares.	All invitations sent out.
3. On-site Surveillance Training.	From October 1980. See attached schedule. EPI and Surveillance.	28,600	Main theme - 1980/81 National Immunization and Surveillance Programme with inter-island courses for small territories and regional courses for larger territories.	In progress - Belize, Guyana, Jamaica, Caymans Islands
* <u>Laboratory Training Courses</u>				
1. Laboratory Directors Workshop.	To be held mid-May 1981. 19 CMC's invited, plus Dutch & French Territories. AID to fund CMC's except Bermuda, Trinidad plus UWI.	18,000	Small increase to cover higher than originally anticipated per diem rate and air fares.	Scheduled 18th - 22nd May
2. Laboratory Course for Technicians.	To be held at CAREC - October 1980 on Respiratory and Nervous System Infections for 25 technicians.	23,000	- Ditto - Malaria Diagnostic Course will also be provided.	As scheduled - 2 weeks (2nd on Malaria)
3. On-site Laboratory Training Course - 7 persons. (7 sites)	Schedule to be determined following Laboratory Course (B2) and after discussion with individual laboratory directors.	4,070		Malaria course held September in Jamaica for North Caribbean.
4. On-site laboratory follow-up for 2 & 3 above.	- Ditto -	12,000	Slight decrease in budget.)
IV. <u>ON-SITE STRENGTHENING OF LABORATORY MANAGEMENT AND LABORATORY TECHNIQUES.</u>	6 months consultant services. Lynette Berkeley	19,000	Use of 2 Caribbean consultants. Use of unexpended balance Year I.	) In progress.))

PROJECT ELEMENT	PROPOSED IMPLEMENTATION DATE/DETAILS	BUDGET AMOUNT	COMMENTS	DATE EXECUTED
<u>EQUIPMENT AND SUPPLIES</u>				
C. <u>SURVEILLANCE AND LABORATORY SUPPLIES</u>				
2. Epidemic investigation supplies	Order September 1980	6,050		Ordered.
3. Laboratory Training Course supplies.	Order September 1980	1,430		
4. Proficiency Testing Supplies.	Order September 1980	935		
5. Other Laboratory Supplies/ Inflation.	Order as needed.	1,320		
E. <u>INFORMATION SYSTEM</u>				
Data Processing Equipment -				
2. Instructional Training.	Two individuals. To follow delivery of Computer in September 1980.	3,000	Mini-computer installation behind 1980 schedule due to delays by supplier.	Training completed.
3. Programming Assistance	Training and programming assistance.	20,000	Budget increased due to higher than anticipated travel costs.	
<u>OTHER ACTIVITIES</u>				
1. Audio-visual training materials and technical assistance.	Order supplies September 1980 for delivery by November. Arrange training for new A.V. technician between October 1980 and March 1981.	10,000		
2. Zoonoses Surveillance Study (in humans and animals).	Study will be undertaken during September - November 1980.	12,500	Study was not undertaken as originally scheduled in Year I, as supporting activities could not be then implemented.	Rescheduled April 1981.
Sub-total		321,545		
Contingencies (5% of Total)		16,077		
<u>TOTAL</u>		337,622		
Project Support Costs (20% of Project Costs)		67,524		
<u>GRAND TOTAL</u>		405,146		

Country _____

Date _____

Person interviewed _____

Title _____

Interviewed by _____

1. Are you familiar with the Caribbean Epidemiology Centre (CAREC)?

Yes

No

2. Have you called CAREC for assistance or consultation in 1980?

Yes

No

a. how many times? _____

b. for what problems? _____

3. Does your country send people for training to CAREC?

Yes

No

4. Do you receive the CAREC Surveillance Report (CSR)?

Yes

No

a. How many copies? _____

b. When did you receive the last issue? (November)? _____

c. When was it distributed? _____

d. Is it useful? Yes _____ No _____

Please comment: _____

5. Do you have a "library" of public health reference materials?

Yes

No

Can we see it? _____

Comments

Have you ordered some?

Have you received?

11. Regarding investigations; what supplies do you have available?

	<u>Yes</u>	<u>No</u>
blood collection tubes		
syringes, vacutainers		
stool specimen containers		
swabs		
containers to carry specimens		
containers to ship specimens		
labels for shipping		
chlorine tester		
thermometer - patient		
thermometer - food		

city

12. Who is responsible for shipping specimens? _____
Name of person

13. Were reports written on outbreak investigations? Yes No

14. Look at the last outbreak reported:

a) Obtain dates of: 1st case _____
notification _____
investigation _____

b) Describe quality of the investigation, in regard to epidemiology, laboratory, report, follow-up

c) What action was required? _____

d) What action was taken? _____

e) Was it reported to CAREC? Yes No If no, why not?

15. Do you have a Statistical Surveillance Officer? Yes No

a) If yes, the name _____

16. How many reporting units (clinics, physicians, etc.) are there in this country? _____

a) Looking at last months report, how many reported? _____

17. Is there a chart or graph related to surveillance on the wall of the epidemiologist's office? Yes No

Describe _____

18. Do you communicate on a regular basis with the laboratory?

- _____ weekly
- _____ monthly
- _____ occasionally, not regularly
- _____ not regularly

19. When was the last visit you made to the laboratory? _____

20. How do you use international disease information you obtain from CSR or CAREC cables, regarding air and sea passengers? _____

21. Have you had a suspect case of malaria in the past year? Yes No

a) What action was taken? _____

b) What laboratory work was done? _____

c) Are you confident of the laboratory's ability to diagnose malaria? Yes No

d) Did you call CAREC? Yes No

e) Was the case diagnosed finally as Malaria? Yes No

22. How do you get information to your country's travellers on Malaria risks and needs for prophylaxis abroad?

23. Fill in the following (indicate whether interviewee can remember the numbers, must look them up or ask someone else).

Disease	1980 - Number of cases	Number of deaths	Investigated?
Tetanus	_____	_____	_____
Measles	_____	_____	_____
Typhoid	_____	_____	_____
Gastro-enteritis	_____	_____	_____

24. Have you been to workshops/courses at CAREC?

Yes _____ No _____

a) Which one? _____

b) Were they useful? Yes _____ No _____ Describe: _____

25. Have you conducted courses/workshops, etc. based on the training you received?

Yes _____ No _____

Describe: _____

26. Do you have a designated (medical officer) epidemiologist?

Yes _____ No _____

Name _____

Description _____

Location _____

How do you relate to him? _____

27. Are you satisfied with the training you received at CAREC?

Yes No

Explain: _____

a) What extra responsibilities have you been given?

b) How has this affected your career? _____

28. Have you observed a difference in the type or quality of your work after the training?

Yes No

Describe: _____

a) Have there been any changes? Yes _____ No _____

29. In case of a natural disaster, what will be your reporting units?

30. How should disease problems be reported:

As specific diseases OR As clinical manifestations
e.g. Meningitis e.g. Fever,
Typhoid Diarrhoea
Cough

31. What type of mass immunisation campaign would you conduct after a hurricane?

- Typhoid
- Tetanus
- Gamma Globulin
- None

27.

33

32. How do you think CAREC could be more helpful in assisting or advising your public health activities?

33. Job ^{satisfaction} ~~description~~, describe?

DESIGNATED EPIDEMIOLOGISTS INTERVIEW

Country _____

Date _____

Person interviewed	Position/Title	Interviewed by
--------------------	----------------	----------------

1. Are you familiar with the Caribbean Epidemiology Centre (CAREC)? Yes _____ No _____

2. Have you called CAREC for assistance or consultation in 1980? Yes _____ No _____

a. how many times? _____

b. for what problems? _____

3. Does your country send people for training to CAREC? Yes _____ No _____

4. Do you receive the CAREC Surveillance Report (CSR)? Yes _____ No _____

a. How many copies? _____

b. When did you receive the last issue? (November)? _____

c. When was it distributed? _____

d. Is it useful? Yes _____ No _____

Please comment: _____

5. Do you have a "library" of public health reference materials? Yes _____ No _____

Can we see it? _____

Comments

Have you ordered materials?

Have you received materials?

6. During 1980, how many epidemic investigations were done in this country? _____

a) What were they? _____

7. Were you involved in the investigation?

Yes _____ No _____

a) If yes, in what capacity? _____ in field investigation

_____ coordinator, field office

8. Were there other disease problems during the year that should have been investigated?

Yes _____ No _____

a) If yes, what were they, and why weren't they investigated? _____

9. Do you have pre-prepared epidemic investigation forms?

Yes _____ No _____

a) Which ones? _____, _____, _____
_____, _____, _____

b) Can we see them? Note: where located _____
number stocked _____

10. Do you have a typhoid register?

Yes _____ No _____

a) If yes, have you used it? Yes _____ No _____

Comments: _____

11. Regarding investigations; what supplies do you have available?

	Yes	No
blood collection tubes	_____	_____
syringes, vacutainers	_____	_____
stool specimen containers	_____	_____
swabs	_____	_____
containers to carry specimens	_____	_____
containers to ship specimens	_____	_____
labels for shipping	_____	_____
chlorine tester	_____	_____
thermometer - patient	_____	_____
thermometer - food	_____	_____

12. Who is responsible for shipping specimens?

_____ Name of person

13. Were reports written on outbreak investigations?

Yes

No

14. Look at the last outbreak reported:-

a) Obtain dates of: 1st case _____

notification _____

investigation _____

b) Describe quality of the investigation, in regard to epidemiology, laboratory, report, follow-up

c) What action was required? _____

d) What action was taken? _____

e) Was it reported to CAREC? Yes _____ No _____ If no, why not? _____

15. Do you have a Statistical Surveillance Officer?

Yes No

a) If yes, the name _____

16. How many reporting units (clinics, physicians, etc.) are there in this country? _____

a) Looking at last months report, how many reported? _____

17. Is there a chart or graph related to surveillance on the wall of the epidemiologist's office?

Yes No

Describe _____

18. Do you communicate on a regular basis with the laboratory?

- _____ weekly
- _____ monthly
- _____ occasionally, not regularly
- _____ not regularly

19. When was the last visit you made to the laboratory? _____

20. How do you use international disease information you obtain from CSR or CAREC cables, regarding air and sea passengers? _____

21. Have you had a suspect case of malaria in the past year?

Yes No

a) What action was taken? _____

b) What laboratory work was done? _____

c) Are you confident of the laboratory's ability to diagnose malaria?

Yes No

d) Did you call CAREC?

Yes No

e) Was the case diagnosed finally as Malaria? _____

Yes No

22. How do you get information to your country's travellers on Malaria risks and needs for prophylaxis abroad?

23. Fill in the following (indicate whether interviewee can remember the numbers, must look them up or ask someone else).

<u>Disease</u>	1980 - Number of cases	Number of deaths	Investigated?
Tetanus	_____	_____	_____
Measles	_____	_____	_____
Typhoid	_____	_____	_____
Gastro-enteritis	_____	_____	_____

24. Have you been to workshops/courses at CAREC?

Yes No

a) Which one? _____

b) Were they useful? Yes No Describe: _____

25. Have you conducted courses/workshops, etc. based on the training you received?

Yes No

Describe: _____

26. Do you have a deputy epidemiologist?

Yes No

Name _____

Description _____

Location _____

How is he used? _____

27. Are you satisfied with the training he/she received at CAREC?

Yes No

Explain: _____

28. Have you observed a difference in the type or quality of his work after the training?

Yes No

Describe: _____

29. In case of a natural disaster, what will be your reporting units?

30. How should disease problems be reported:

- As specific diseases OR As clinical manifestations
- e.g. Meningitis e.g. Fever,
- Typhoid Diarrhoea
- Cough

31. What type of mass immunisation campaign would you conduct after a hurricane?

- Typhoid
- Tetanus
- Gamma Globulin
- None

32. How do you think CAREC could be more helpful in assisting or advising your public health activities?

Are you satisfied with your job?

Date

Interviewed by

SURVEILLANCE STATISTICAL OFFICER (SSO)

BACKGROUND

Name

How long have you been a SSO?

Any other duties now besides those of SSO?

.....

How many SSO Workshops at CAREC have you attended?

Have you participated in any other training organised by CAREC?

.....

Have these workshops/training courses been useful in your work?

.....

Have you given any in-service training to others? No Yes (Specify)

.....

.....

Have you received any training at your work site from CAREC staff? No Yes (Specify)

.....

.....

SERVICES PROVIDED

To the National Epidemiologist

The last surveillance report submitted to the epidemiologist for the week ending

.....

Do you prepare tabulated data only or do you prepare notes in draft/final form. (If latter affirmative, review samples).

Give the number of reporting "units"

What % reported for the week ending 24th January or for the last week (give dates) for which

reports from units were received

Do you regularly chart or otherwise monitor the percentage reporting?

Do you discuss these results with the epidemiologist? No Yes

How do you usually communicate with the epidemiologist:

In writing By phone Person to person discussion

Do you have any regular meetings with the: epidemiologist No Yes

deputy epidemiologist No Yes

Do you provide any alert system to the epidemiologist about unusual occurrences of disease? No Yes If yes (review)

Do you visit reporting units? No Yes If yes, which ones and how frequently?

Do you provide other services for the epidemiologist? (If affirmative, examine samples in each case)

	<u>NO</u>	<u>YES</u>	<u>COMMENTS</u>
Preparing graphs
Maintaining a typhoid register
Preparing Tables for Annual Report
Preparing notes for Annual Report
Providing statistical information for specific reports
Coding death certificates
Printing (stencilling) National Surveillance Report circulating in country (give circulation No.)
Sending reports to CAREC
Sending Reports to other Agencies/ countries. (If affirmative, describe)

	<u>NO</u>	<u>YES</u>	<u>COMMENTS</u>
<u>Facilities</u>			
Functional Typewriter
Functional Calculator
Easy access to telephone
Access to stencil duplicator
Access to copying machine
Adequate paper supplies
Adequate graph material (paper/markers)
Adequate stock forms PASB 192 (E) - 1980
Adequate Postal facilities (Internal) (To CAREC)
Adequate stock cards for individual disease recording
Adequate typhoid Register cards
Adequate filing facilities

Reference Books

Modern Medical Dictionary	....	....	.....
International Classification of diseases Vol. I and II (1975 revision)	....	....	.....
Statistical Text	....	....	.....

What support would you want from CAREC during the next five years?.....

If the SSO is near retirement age or is likely to be transferred within the next 2 years
 to another assignment, what training or other arrangements have been made to ensure
 continuity of service?

Y
PERSON IN CHARGE
DATE

EPI TARGETS COVERAGE

EPI Target population

How is target population calculated?

.....
.....
.....
.....
.....

1980 Vaccinations

Number

Estimated Coverage

DPT ₁	.....	.....
DPT ₃	.....	.....
Polio ₁	.....	.....
Polio ₃	.....	.....
Measles	.....	.....

Have you had any disease in vaccinees?

Yes No If yes, what

How many

What was done about it?

.....
.....
.....
.....

COUNTRY 45

PERSON IN CHARGE
OF COLD STORAGE

DATE INTERVIEWED

CENTRAL VACCINE STORAGE

	<u>Number</u>	<u>Number Functional</u>
Refrigerators
Freezers

Refrigerator holding most labile vaccine

Days last 30 temperature recorded

Last recorded temperature

Temperature recorded by evaluator

What is your back-up plan for electrical failure

Is any vaccine inventory kept by lot and expiration date? Yes No

Are all vaccine in date Yes No

DPT on inventory # vials.....

DPT by count # vials

How many carriers have you received?

How do you ship vaccines to your most distant location?

Country _____

Date 4/6

Person interviewed _____ Position/Title _____ Interviewed by _____

I. Project purpose - To increase CAREC capability to assist CMC's in laboratory activities.

(Questions related to courses conducted for public health laboratory personnel i.e. 1979 bacteriology laboratory course, 1980 bacteriology laboratory course, 1980 malaria course).

1. Did someone from your country attend each of the courses?

Yes No

If no, why not? _____

Is person trained still there?

Yes No

Is person trained still in same department?

Yes No

2. What new laboratory procedures have been instituted because of the training courses?

Questions from 1979 Bacteriology Course.

a. Do you culture specimens for GC on Thayer-Martin media?

Yes No

If yes, how do you confirm identity of isolates?

b. Do you culture any specimens anaerobically?

Yes No

Do you culture high vaginal post-partum swabs anaerobically?

Yes No

c. Which selective plating media do you use for entire pathogens?

d. What enrichment media do you use for entire pathogens?

e. Have you carried out quality control on selective media?

Yes No

f. Do you use the Kirby-Bauer procedure for sensitivity testing?

Yes No

Questions from 1980 Bacteriology Course.

a. By what means do you attempt to culture Haemophilus species?

b. How do you identify Haemophilus species?

c. Do you perform beta lactamase tests?

Yes No

By what method? _____

d. Do you use tellurite media for culture of C. diphtheriae?

Yes No

e. How do you identify Streptococcus pneumoniae and Streptococci of Groups A, B, and D?

Questions for 1980 Malaria Course

a. Do you prepare and stain both thick and thin films when attempting diagnosis of malaria?

Yes No

b. What staining technique do you use for malaria slides?

3. What type of constraints prevent you from utilizing procedures given in training courses? (e.g. personnel, equipment, supplies, money).

4. Did participant do in-service training of other laboratory personnel after the training courses? Yes _____ No _____

In your own laboratory? Yes _____ No _____

In other laboratories in the Country? Yes _____ No _____

How many people received some in-service training?

5. What future laboratory training courses are needed?

Questions related to 1980 Laboratory Directors/ Workshop

1. Was your laboratory represented? Yes _____ No _____

2. Was training in laboratory management beneficial? (Areas covered included leadership styles, productivity and workload management, and financial aspects of decision making regarding automation). Yes _____ No _____

3. How was management training beneficial?

Questions related to 3 Bacteriology and 3 Parasitology Proficiency Testing Sets per Year.

1. Do you participate? Yes _____ No _____

2. Do you participate on all samples or selected samples?

3. Are proficiency test samples handled like routine samples? Yes _____ No _____

Explain: _____

4. If proficiency test results indicate deficiencies, do you request CAREC bench training or on-site visits to remedy the deficiencies?

Yes No

Can deficiencies be remedied without outside assistance?

5. Are the proficiency test samples mailed from CAREC received in a satisfactory condition?

Yes No

6. Is system for shipping reference specimens to CAREC working satisfactorily?

Yes No

II. Project Purpose: To improve accuracy and efficiency of laboratory identification of micro-organisms. (See categories, P. 39 of AID Project Paper).

1. Have you improved your laboratory services capability since October of 1979? Yes _____ No _____

Was this due to laboratory courses? Yes _____ No _____

Was this due to proficiency testing? Yes _____ No _____

Was this due to on-site training visits? Yes _____ No _____

2. How have you improved?

3. What additional training or supplies are needed for improvement?

III. Project purpose: Reporting of important laboratory findings.

1. Who receives your laboratory reports?

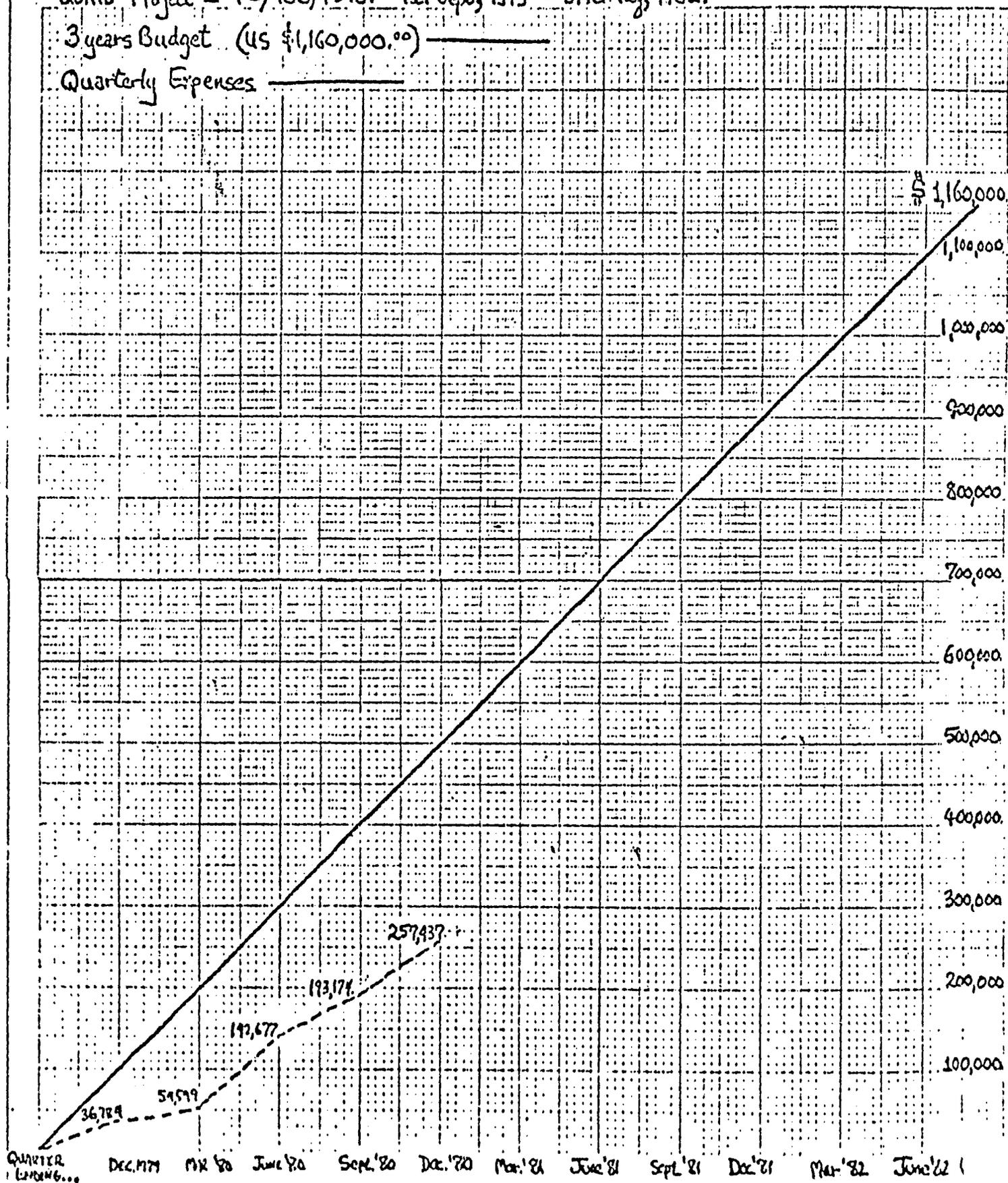
2. Which pathogens, if any, would you report to your epidemiologist?

Appendix 3

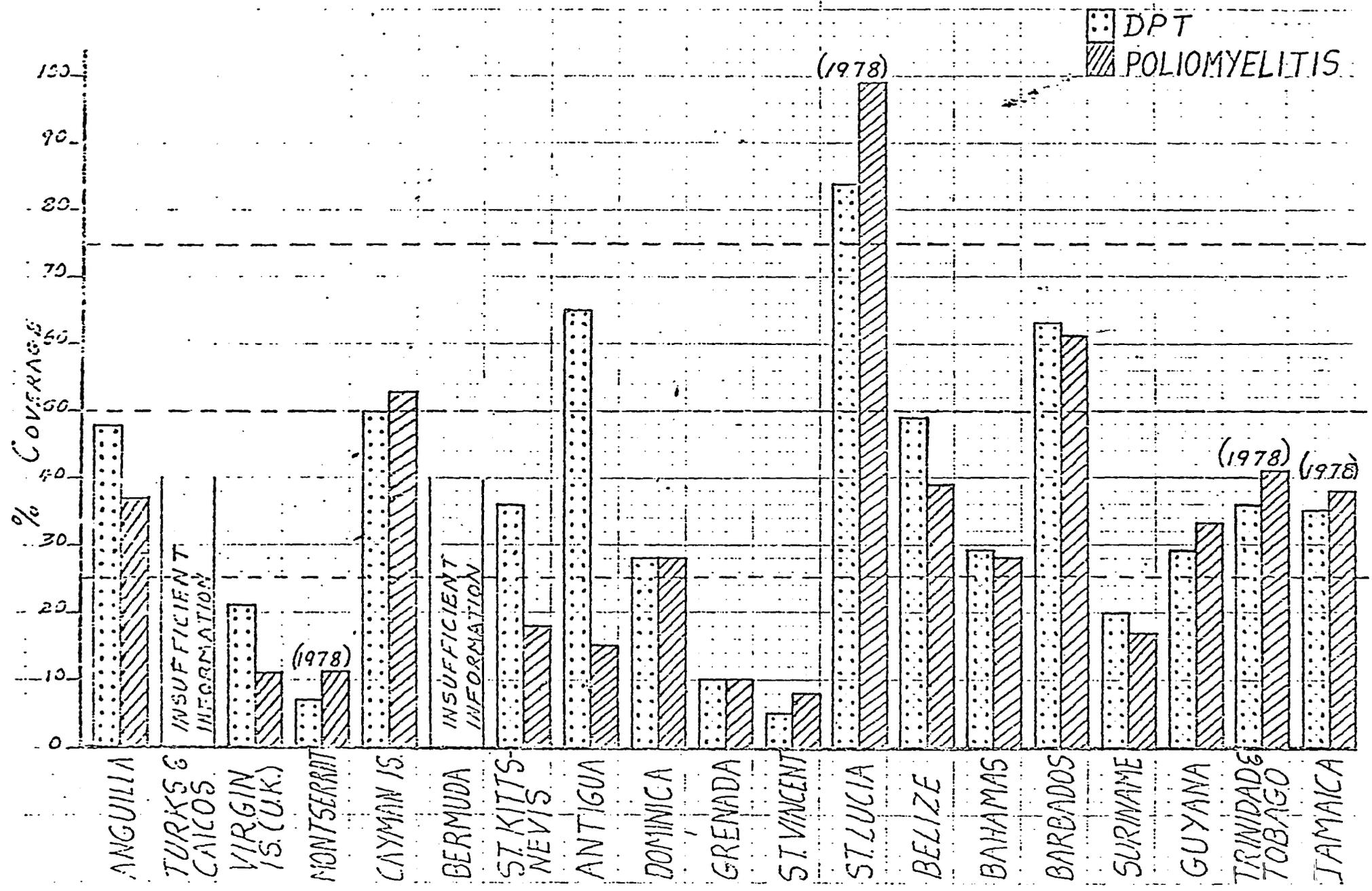
USAID Project - PJ/180/4370. 1st. Sept, 1979 - 31st Aug, 1982.

3 years Budget (US \$1,160,000.00)

Quarterly Expenses



IMMUNISATION COVERAGE BY COUNTRY AT AGE ONE YEAR OLD - 1979



SELF AUDIT FORMAT

(Example)

Country Population _____
Target Population by age _____ to _____
Estimated Target Population _____

<u>1980 Vaccination</u>	<u>Number</u>	<u>Estimated Coverage</u>
BCG		
DPT ₁		
DPT ₂		
DPT ₃		
Polio ₁		
Polio ₂		
Polio ₃		
Measles		

<u>Refrigerators</u>	<u>No. Days Temp. Monitored During December, 1980</u>	<u>No. Days Temp. > 15°</u>
1		
2		
3		
4		

<u>Freezer</u>	<u>No. Days Temp. > 0°</u>
1	

<u>Cold-Room</u>
1

<u>Vaccine Inventory</u>	<u>Vaccine</u>	<u>Lot</u>	<u>No. Vial</u>	<u>Exp. Date</u>
1				
2				
3				
4				
5				

5.0 TRAINING

5.1 AIMS AND FUNCTIONS

- (1) To collaborate closely with Universities of the area, particularly the faculties of Medicine and Agriculture, the Commonwealth Caribbean Medical Research Council and the Secretariat of the Caribbean Health Ministers' Conference.
- (2) To provide training in Epidemiological Surveillance and Laboratory Diagnosis and their field application for personnel at various levels in health and other related services.

5.2 TRAINING PROGRAMME - 1980

The training unit exists to provide logistical support to staff members with technical responsibilities for specific courses, workshops, in-service training and seminars. Mr. Ross Cox, Public Health Advisor on secondment from CDC - returned in June, 1980 after serving a three-year term of duty at CAREC. In addition to his responsibilities as Public Health Advisor, Mr. Cox also was instrumental for coordinating CAREC Training Activities. His contribution and service is appreciated. In August, 1980 a full time Training Officer, Dr. A.N. Hoosein was hired to coordinate the various activities of this unit.

During 1980, funds provided by the USAID Grant facilitated different training activities including formal courses at the Centre, in-country workshops, individual attachments, and the continuation of annual workshops for epidemiologists, laboratory directors and statistical officers. This degree of funding flexibility enabled the Centre staff to plan training experiences to meet individual participant needs as in the case of attachments as well as general exposure training such as the annual course for Deputy Epidemiologists. It is regrettable that USAID funds for Medical Student Clerkships were not utilised in spite of several reviews with UWI staff.

During 1980, a total of fifty-nine (59) training activities were conducted either at CAREC or in CAREC member countries. These activities enabled a total of 1114 health-related professional persons to obtain training provided by CAREC.

Twenty-seven (27) in-country workshops were conducted in Antigua, Bermuda, Belize, Barbados, St. Vincent, St. Kitts, Montserrat, Guyana, Jamaica, Cayman Islands, Suriname and Trinidad and Tobago. Target group for these activities included: PHIs, PHNs, laboratory technicians and various categories of food service workers.

There were six (6) attachments, varying from 1 week to 3 months in duration. Participants included medical officers from Dominica, Guyana, and Jamaica (UWI).

During 1980, CAREC staff provided a total of 18,600 contact hours in training activities.

In addition to the above, CAREC senior personnel in the areas of Virology and Laboratory services conducted eight (8) in-service training programmes for CAREC laboratory technicians. These were further supplemented by guest lectures in a variety of specialties.

Table 5.1 provides a listing of all training activities for 1980 (by title/staff/location).

Table 5.2 provides a listing of persons receiving training by professional category/country of origin.

Table 5.3 provides a listing of attachments by country/profession.

Tables 5.4 and 5.4.a total contact hours by country/profession.

Table 5.5, total in-service training at CAREC by profession.

Underlying these training activities were the availability and use of a variety of print and non-print teaching materials. Printed materials include handouts, pamphlets, study-guides and books. Non-print materials include overhead transparencies, 2 x 2 slides, audio tape recordings, and motion pictures. These materials combined with various teaching methodologies including lecture/discussion, "hands-on" practical and field exercises facilitated both a meaningful learning experience for participants and the attainment of Training objectives.

During the last quarter (1980) the Training Officer conducted a comprehensive review of CAREC's non-print teaching resources and compiled a listing of these resources.

Of significant importance is the need to develop and produce teaching materials utilising local expertise and resources. Personnel and facilities to execute this new development are available and already

functioning re the Surveillance Manual. This manual will consist initially of six teaching units e.g. Introduction to Epidemiology; Infectious Diseases Review; Statistics; Epidemic Investigation; Disease Surveillance and Post-Disaster Surveillance. Its major purpose and function is to serve as the principal reference tool for health personnel involved with surveillance and also as a self-instructional aid for on-the-job training.

During 1980, physical conversion of Flat #3 into a Training Unit comprising of office space for the Training Officer, a dark-room, a graphics room and a non-print media storage room were achieved. Also an audio-visual graphics trainee was employed. Thus, with a full complement of staff on hand in the Training Unit, the production of Audio Visual teaching materials with emphasis on Caribbean examples can be initiated. Moreover, with the acquisition of the new printing press, printed teaching materials can be reproduced in large quantities without significant loss in quality.

At the time of this report, additional Audio Visual equipment, graphic supplies and proposed modification to the Lecture Theatre are under consideration.

CAREC's entire training activities and efforts will be subjected to a comprehensive review and evaluation during the first quarter of 1981 by the evaluation team. This team will be undertaking the mid-point review of the USAID Grant to CAREC for Surveillance and Training.

5.3 TRAINING PROGRAMME - 1981

An evaluation of CAREC's Training programme will be undertaken, linked with the mid-point evaluation of USAID Surveillance and Training Project.

There may be some modifications to the 1981 CAREC Training Program after the Assessment Report is received from the USAID Evaluation Team..

However, it is envisaged that USAID Grant funds will permit continuation of:

I The annual workshops for Statistical Officers, Laboratory Directors and Epidemiologists.

II Individual attachments from member countries to CAREC.

- iii Formal laboratory courses at CAREC.
- iv In-country Surveillance Workshops.
- v In-Country follow-up to Surveillance and Laboratory Courses.

In addition to the above, the following activities will be initiated and when applicable, implemented during 1981.

- i Surveillance Manual - continue to develop and disseminate to meet basic and post-basic needs.
- ii Training of the Audio Visual technician in instructional design and development to facilitate production of audio visual materials.
- iii Design, develop and produce supportive audio visual materials in the area of Epidemic Investigations using Caribbean examples.
- iv Formalise a systematic approach to continuing education for Deputy Epidemiologist (Epidemiology Officers.)
- v Stimulate active participation by UWI in terms of Medical Student Clerkships (Elective).
- vi Develop a computerised data bank of CAREC's training effort.

TABLE 5.1

SUMMARY OF TRAINING ACTIVITIES AND
CONFERENCES (1980)

NO.	DESCRIPTION	CAREC STAFF	DATES	LOCATION
80.1A	Statistical Surveillance Officer Attachment	A. Lambourne	January 7 - 11	CAREC
80.2	Blood Smear Techniques	C. Edwards	January 11	CAREC
80.3	Introduction of arthropods of public health importance.	E. S. Tikasingh	January 18 - April 4	CAREC
80.4	Epidemiology and In-service Training	X. Leus	January 7 - 25	Suriname
80.5	Nosocomial Salmonellosis in Paediatric age group	M. West R. Doug Deen	January 10	POS General Hospital, Trinidad
80.6	Introduction to Epidemiology	P. Hamilton P. Diggory	January 16 - 17 January 23 - 24	Queen Elizabeth Hospital, Barbados
80.7	Epidemiology for Nursing Students	P. Diggory N. Arnt	January 14 - 18	West Indies School of Public Health, Jamaica.
80.8	Clinical Pathology Conference on Yellow Fever	P. Diggory	January 24	Queen Elizabeth Hospital, B'do

A = ATTACHMENT

TABLE 5.1 (Cont'd)

NO.	DESCRIPTION	CAREC STAFF	DATES	LOCATION
80.9C	6th Scientific Advisory Committee	P. Hamilton	March 18 - 20	CAREC
80.10C	CAREC Council Meeting	P Hamilton	March 24 - 25	CAREC
80.11A	Medical Student Attachment (N. Williams)	B. Hull C. Bratt	January - March, 1980	CAREC/POS General Hospital, Trinidad
80.12	RIA Hepatitis Testing	B. Hull	March 20 - 29	CAREC
80.13	Yellow Fever Update and EPI Presentation	M. West H. Smith	March 17	San Fernando General Hospital
80.14A	MOH Attachments to Surveillance Unit	P. Diggory N. Arnt	April 8 - 18	CAREC
80.15	Epidemiology and Epidemic Investigation for PHIs and PHNs	P. Diggory N. Arnt X Leus H. Smith	April 14 - 18	CAREC
80.16	Dental Epidemiology Workshop	None PAHO/Dr. Morris	April 21 - 23	CAREC
80.17	Statistical Surveillance Officers Workshop	A. Lambourne	April 29- May 1	CAREC
80.18	Food Safety for Food Service Supervisors	P. Diggory	April 28 - May 2	Barbados

A = ATTACHMENT

TABLE 5.1 (Cont'd)

NO.	DESCRIPTION	CAREC STAFF	DATES	LOCATION
80.19	Epidemiology for Health Science Tutors	P. Diggory	April 28 - May 2	Barbados
80.20	Food Safety for Food Service Workers	P. Diggory	May 7 - 8	Piarco, BWIA Trinidad
80.21A	Mosquito Identification	E. Tikasingh & Staff	May 12 - 16	CAREC
80.22	4th Annual Laboratory Directors' Work- shop	D. Bassett R. Narine R. Cox	May 12 - 15	CAREC
80.23	CAREC Laboratory Staff Management Seminar	R. Narine CDC	May 16	CAREC
80.24	6th Annual Designated Epidemiologist Workshop	P. Diggory R. Cox et al	June 9 - 13	CAREC
80.25	EPI Workshop	H. Smith R. Cox PAHO.Washington	June 9 - 13	CAREC
80.26	Lectures in Malaria Techniques in Collecting arthropods, Lab. Practical examination	E. Tikasingh & Staff	June 20	CAREC
80.27	Research Unit	J. Andrews	July 21 - 25	St. Vincent

TABLE 5.1 (Cont'd)

NO.	DESCRIPTION	CAREC STAFF	DATES	LOCATION
80.28	Designated Epidemiologists Course	J. Andrews P. Diggory N. Arnt X. Leus H. Smith Y. Holder A. Hoosein P. Hamilton D. Bassett E. Tikasingh W. Swanston L. Charles B. Mahabir R. Doug Deen	September 2 - 26	CAREC
80.29A	MOH Attachment: Dr. E. London (Guyana)		September 2 - 26	CAREC
80.30A	MOH Attachment to Surveillance Unit Dr. William Green (Dominica)			CAREC
80.31	Malaria Refresher Course	E. Tikasingh C. Edwards	September 15 - 19	UWI - Jamaica
80.32	Bacteriology Laboratory Workshop	D. Bassett P. Fields	October 6 - 11	CAREC
80.33	Malaria Refresher Course	E. Tikasingh C. Edwards	October 12 - 17	CAREC
80.34	Basic Epidemiology	J. Andrews	October 1 - 2	Antigua
80.35	Epidemiology	J. Andrews	October 6	St. Kitts/ Nevis

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TABLE 5.1 (Cont'd)

NO.	DESCRIPTION	CAREC STAFF	DATES	LOCATION
80.36	Epidemiology for Health Science Students	N. Arnt	October 20 - 24	Barbados
80.37	Paediatrics priorities for WHO	P. Hamilton	October 15	POS General Hospital, T'dad
80.38A	Fast Food Inspection - Attachment. Mr. H. Gordon (Jamaica)	P. Diggory	October 14 - 24	CAREC
80.39	Food Safety Course for PHIs	P. Diggory M. Manchew A. Hoosein	October 22 - 24	CAREC
80.40	Food Safety Inspection and Education Techniques	P. Diggory	October 27 - 31	Bermuda
80.41	Foodborne and Waterborne illness Investigation	P. Diggory	October 30	Bermuda
80.42	Food Safety Education	P. Diggory	October 27 - 29	Bermuda
80.43	Expanded Program of Immunization and Surveillance Workshop	H. Smith	October 14 - 18	Belize
80.44	Medical Student Clerkship	D. Bassett P. Higgins B. Hull H. Reid	November 3 - 14	CAREC POS General Hospital San Fernando General Hosp.

A = ATTACHMENT

TABLE 5.1 (Cont'd)

NO.	DESCRIPTION	CAREC STAFF	DATES	LOCATION
80.45	Training Course for Hospital Food Service Workers	P. Diggory	November 10 - 12	Montserrat
80.46	Food Safety Training for Food Service workers and managers	P. Diggory	November 10 - 13	Montserrat
80.47	Epidemiology for UWI Undergraduates	P. Hamilton	November 12 - 13	Barbados
80.48	Expanded program on Immunization/ Surveillance	H. Smith	November 10 - 14	Guyana
80.49	Epidemiology and Surveillance Course	X. Leus	November 25 - December 11	Suriname
80.50	UWI Short Course on Child Health	D Bratt D. Bassett D. Picou Prof. Harland P. Diggory	December 1 - 5	CAREC
80.51	Epidemiology for Community Health Nurses	N. Arnt P. Diggory J. Andrews Y. Holder X. Leus A. Hooseln	December 8 - 12	CAREC
80.52	Expanded Program on Immunization and Surveillance	H. Smith	December 1 - 5	Jamaica

TABLE 5.1 (Cont'd)

NO.	DESCRIPTION	CAREC STAFF	DATES	LOCATION
80.53	Expanded Program on Immunization and Surveillance	H. Smith	December 8 - 11	Cayman Islands
80.54	Epidemiology	J. Andrews	November 17 - 19	Jamaica (UWI)
80.55	Epidemiology	J. Andrews	December 1 - 5	WISPH(Jamaica)
80.56	Food Safety Course	P. Diggory	December 3 - 4	Mt. Hope, T'dad
80.57	Laboratory Diagnosis of Malaria	E. Tikasingh	December 4 - 10	Bahamas
80.58	Lectures on Malaria	E. Tikasingh	December 4 - 10	Bahamas
80.59	Modern EPI Concepts	H. Smith	December 13	San Fernando, Trinidad

TOTAL CAREER TRAINING ACTIVITIES - 1963
- PERSONS RECEIVING TRAINING (BY COUNTRY AND PROFESSION)

COUNTRY	PARTICIPANTS							TOTAL
	PHYSICIANS	NURSES	PHIs	LAB. TECH.	STATISTICAL OFFICERS	MED. STUDENTS	OTHER	
ANGUILLA	-	1	-	1	1	-	-	3
ANTIGUA	3	8	2	3	3	-	6	25
BAHAMAS	6	1	-	18	1	-	-	26
BARBADOS	52	2	1	3	1	33	7	99
BELIZE	5	13	1	3	2	-	1	25
BERMUDA	1	10	18	4	1	-	60	94
BRITISH VIRGIN IS	-	2	1	2	-	-	-	5
CAYMAN ISLANDS	1	9	-	2	1	-	-	13
DOMINICA	1	4	-	3	1	-	-	9
GRENADA	1	1	2	3	1	-	-	8
GUYANA	4	32	2	3	4	-	5	50
JAMAICA	15	91	26	16	30	-	-	178
MONTSERRAT	1	2	-	3	1	-	71	78
ST. KITTS/NEVIS	-	6	2	3	-	-	-	11
SAINT LUCIA	-	3	3	3	1	-	-	10
ST. VINCENT	-	13	-	-	1	-	-	14
SURINAME	3	15	-	2	2	-	-	22
TRINIDAD & TOBAGO	54	164	76	8	4	47	83	436
TURKS & CAICOS	1	2	1	-	1	-	-	05
NAMBIA	-	2	-	-	-	-	-	2
GUADELOUPE	1	-	-	-	-	-	-	1
TOTAL	149	381	135	80	56	80	233	1114

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TOTAL CONTACT HOURS FOR CAREC TRAINING ACTIVITIES - 1960
(BY COUNTRY AND PROFESSION)

COUNTRY	PARTICIPANTS							TOTAL
	PHYSICIANS	NURSES	PHIs	LAB TECH.	STATISTICAL OFFICERS	MED. STUDENTS	OTHER	
ANGUILLA	-	36	-	32	18	-	-	86
ANTIGUA	48	140	24	92	42	-	72	418
BAHAMAS	107	36	-	259	18	-	-	420
BARBADOS	110	49	120	92	18	92	56	537
BELIZE	150	379	30	92	48	-	30	729
BERMUDA	24	54	266	94	18	-	120	576
BRITISH VIRGIN IS.	-	56	120	60	-	-	-	236
CAYMAN ISLANDS	30	276	-	60	18	-	-	384
DOMINICA	30	109	-	92	18	-	-	249
GRENADA	24	30	150	90	18	-	-	312
GUYANA	204	916	240	92	108	-	64	1624
JAMAICA	536	1326	379	408	78	-	-	2727
MONTSERRAT	24	56	-	92	18	-	668	858
ST. KITTS/NEVIS	-	114	30	92	-	-	-	236
SAINT LUCIA	-	86	174	92	18	-	-	370
ST. VINCENT	-	396	-	-	18	-	-	414
SURINAME	92	534	-	60	48	-	-	734
TRINIDAD & TOBAGO	416	2774	1370	204	72	1638	971	7445
TURKS & CAICOS	24	33	120	-	18	-	-	195
NAMBIA	-	26	-	-	-	-	-	26
	24	-	-	-	-	-	-	24
		7426	3123	2111	594	1731	1171	1,600

TABLE 5.4.a.

CAREC IN-SERVICE TRAINING ACTIVITIES - 1980
PERSONS RECEIVING TRAINING
(BY PROFESSION)

<u>PHYSICIANS</u>	<u>NURSES</u>	<u>LAB. TECH.</u>	<u>STATISTICAL OFFICERS</u>	<u>OTHER</u>	<u>TOTAL</u>
2(20 [*])	21(72)	111(315)	13 (18)	69(113)	<u>222 (538)</u>

* () - contact hours

TABLE 5.5

CAREC IN-SERVICE TRAINING ACTIVITIES

NO.	DESCRIPTION	CAREC STAFF	DATES	LOCATION
80.01	Laboratory Management Seminar	C. Duncan (CDC) R. Narine (CAREC)	May 16, 1980	CAREC
80.02	The Later Agglutination Technique for Viral Serology	Dr. G. Quash (France)	July 2, 1980	CAREC
80.03	Surveillance/Laboratory	Dr. P. Diggory	August 26, 1980	CAREC
80.04	CAREC/WHO	Dr. P. Hamilton	September 26, 1980	CAREC
80.05	Practical Examples of Medical Geography	Prof. N. McGlashan (Australia)	October 7, 1980	CAREC
80.06	Coronary Heart Disease/Blood Lipids	Dr. D. Miller	October 29, 1980	CAREC
80.07	Streptococcal Infection	Dr. J.B. Zabriskie (Rockefeller - USA)	November 29, 1980	CAREC
80.08	Basic Virology Course	Dr. P. Higgins	Aug. 14-28, 1980 Sept. 4-25, 1980 Oct. 2-30, 1980 Nov. 6, 1980	CAREC