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PAN AMERICAN HEALTH ORGANIZATION  
CARIBBEAN EPIDEMIOLOGY CENTRE (CAREC)  
REPORT ON THE WORK OF THE CENTRE

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PAN AMERICAN HEALTH ORGANIZATION  
CARIBBEAN EPIDEMIOLOGY CENTRE (CAREC)\*

1.0 INTRODUCTION

At the request of the Caribbean Health Ministers' Conference (CHMC), the Caribbean Epidemiology Centre was established under the technical and administrative supervision of the Pan American Health Organization (PAHO) on 1st January, 1975. It incorporated the Trinidad Regional Virus Laboratory.

The Centre is funded by the Governments of Trinidad and Tobago, Anguilla, Antigua, Barbados, Bermuda, Belize, British Virgin Islands, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Kitts-Nevis, St. Vincent, St. Lucia, Turks & Caicos, the Overseas Development Ministry of the United Kingdom, and the Pan American Health Organization. In addition, the Centre receives financial assistance from the Caribbean Community (CARICOM) through a grant from the Center for Disease Control, Atlanta, and research work is supported by grants by the Medical Research Council (United Kingdom), the Rockefeller University, New York, the American Heart Association and the International Development Research Center (Canada).

2.0 The functions of CAREC were defined in the Multilateral Agreement as:-

2.1 Surveillance

To serve as a special technical resource in the field of communicable diseases under surveillance and to co-operate in the programmes being developed by Governments.

To achieve the reduction of mortality and morbidity associated with communicable diseases in the area.

To act as a centre for epidemiological surveillance for all countries in the Caribbean which are or were participating in or co-operating with the Centre.

To assist or advise governments on the development of effective surveillance.

To assist and advise governments by providing visiting staff expert in surveillance, diagnosis and control of communicable disease.

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\*Presented by Dr. Patrick J. S. Hamilton, Director, CAREC, Port of Spain, Trinidad.

## 2.2 Laboratories

To assess resources and needs of laboratories within the area and assist in their development.

To promote collaborative relations with laboratories which may serve the area.

To provide selective diagnostic laboratory services and facilities needed for surveillance.

To maintain facilities for the investigation of selected animal viruses.

## 2.3 Training

To collaborate closely with universities of the area, particularly the faculties of medicine and agriculture, the Commonwealth Caribbean Medical Research Council (CCMRC) and the Secretariat of the Caribbean Health Ministers' Conference (CHMC).

## 2.4 Research

To carry out research both in the Centre and in the field on disease problems important to the Caribbean.

To provide facilities for visiting workers.

To study virus diseases and their ecology.

## 3.0 REVIEW OF ACTIVITIES

### 3.1 General

During 1976/77 the work of the Centre has concentrated on the development and consolidation of its basic structure and surveillance programme. The appointment of a full time Bacteriologist and a Statistician completed the professional staff and will allow the implementation of a graduate trainee programme during 1977. In January 1977, there were 62 people working at the Centre compared with 38 in January 1975. It is projected that by January 1978 there will be 82 staff members, but the growth thereafter would be minimal. Detailed plans have been drawn up with the Government of Trinidad and Tobago for the remodelling of the Trinidad Public Health Laboratory and CAREC. Phase I of this development programme will be undertaken early in 1977. This will allow an even fuller and more effective co-ordination of the work of the Trinidad Public Health Laboratory (TPHL) and CAREC. Senior technical staff from CAREC participated actively in the TPHL Bacteriology programme.

### 3.2 Surveillance

The Surveillance Section consolidated its position during 1976 with the development of the Statistical Unit. The CAREC Surveillance Report continued to be published monthly and circulation reached 1500. In addition, a series of epidemiological notes (EPI-NOTES) are also being published for information to designated epidemiologists and technicians.

Links for exchanging surveillance information with countries not directly serviced by CAREC in Central and South America are being developed.

The Section now has its own printing facilities. Forms have been designed and circulated for field investigation of gastroenteritis, food-borne disease, tetanus and viral hepatitis.

A wide variety of specific requests for epidemic aid were answered such as:

- (a) histoplasmosis in Belize;
- (b) parathion poisoning in Jamaica;
- (c) glomerulonephritis in St. Vincent;
- (d) typhoid in Bahamas;
- (e) lead poisoning in Barbados;
- (f) dengue fever in St. Lucia; and
- (g) gastroenteritis in Trinidad and Tobago.

The utilization of the designated epidemiologists in each territory has continued to develop and an increasing use of telephonic communication is taking place. A courtesy system for transport of diagnostic specimens has been agreed with Leeward Island Air Transport (LIAT) and negotiations are still continuing with BWIA. Containers and labels in accordance with IATA Regulations have been distributed to the countries.

Seroepidemiological surveys for poliomyelitis were carried out in Trinidad and Tobago and the Turks & Caicos Islands in 1976; in Bermuda, the British Virgin Islands and Bahamas in 1977; similar studies are projected for Belize, Grenada, Guyana, Jamaica and St. Vincent.

A two-week workshop on the evaluation of immunization programmes was held at CAREC from October 25th to November 5th. The report of this workshop was used as the basis of in-service training programmes in Antigua, Belize, British Virgin Islands, Montserrat, St. Vincent, Trinidad and Tobago and the Operations Officer in immunization recommended by the workshop will be appointed.

Countries were assisted in making applications to the CARICOM Secretariat for equipment for national surveillance and laboratories

from the CDC Grant and Anguilla, Antigua, Belize, Dominica, Grenada, Guyana, Jamaica, Montserrat, St. Lucia, St. Kitts Nevis, St. Vincent, Turks & Caicos and Trinidad and Tobago all benefited from the grant in 1976. In Trinidad and Tobago the funds were used to develop a Physician's Manual on utilisation of laboratory services for communicable disease and this loose leaf publication is now being made available with minor modifications to other territories on request.

The work of the Surveillance Section is based on detailed annual work programmes for each country developed by the designated epidemiologists at their annual meeting.

### 3.3 Laboratories

#### 3.3.1 General

The Laboratory Section has continued the development of its services as back up to the surveillance, safety, training and research programmes. It has also continued to improve co-ordination with TPHL. Recruitment to the laboratory division has now established a satisfactory working group and during 1977 will be restructured more effectively. At the request of the Chief Medical Officer in Trinidad and Tobago joint working groups on gastroenteritis, on yellow fever surveillance and on the zoonoses continued to meet.

The laboratory continued to titrate yellow fever vaccine for Trinidad and Tobago, Jamaica and Surinam. Limited supplies of rabies vaccines were held for emergencies and supplied to Guyana, Grenada, Surinam and Trinidad and Tobago.

A collaborative relationship continued to develop with laboratories in the contributing countries, the Center for Disease Control, Atlanta, the United Kingdom Public Health Laboratory Service, the Veterans Hospital in Puerto Rico and the Public Health Laboratories in Surinam and Curacao.

CAREC is a participating laboratory in the CDC Proficiency Testing System and it is intended during 1977 to develop at CAREC a simple proficiency testing system in the Caribbean in Bacteriology and Parasitology.

#### 3.3.2 Virology

The main work of the Laboratory has been in Virology closely co-ordinated with TPHL.

The virology programme has the following objectives:

- (1) To maintain a routine surveillance programme; Diseases of the Central Nervous System - specimens were received from Barbados, Curacao, Guyana, Surinam and Trinidad. Meningitis associated with Echovirus 4 was identified in Barbados.

Influenza - respiratory infections were investigated by virus isolation in tissue culture and on occasions in eggs.

Epidemics of influenza were reported throughout the Caribbean in early 1976 and isolates similar to Influenza A/Victoria were obtained in specimens from Antigua, Barbados, Curacao, Dominica, Guyana, Dominican Republic, St. Lucia and Trinidad and Tobago.

During the first half of the year a survey of human sera for Swine Influenza HI antibodies was made in conjunction with the TPHL and seventy sera from Caribbean countries other than Trinidad were tested. The antibody profile was similar to that found elsewhere in the world and positive titres were found in only 2 people under 40 years of age. Later in the year sera of pigs from Trinidad were tested with negative results.

Gastroenteritis - the study of Gastroenteritis in Trinidad and the examination for rotaviruses in association with Professor L. Spence (Toronto) continued. A new research project on gastroenteritis has started funded by the International Development Research Centre (IDRC) of Canada.

Pyrexia of Unknown Origin - the collection of paired sera continued to be a problem but investigations were carried out on sera from Barbados, Curacao, Guyana, Surinam, St. Lucia and Trinidad and Tobago. From St. Lucia there were three flavivirus (group B arbovirus) conversions and several high Group B HI titres. Sera from St. Lucia were sent to the CDC Laboratories in Puerto Rico where CAREC Dengue 2 serological results were confirmed and an isolation of Dengue 2 obtained in Aedes aegypti by xenodiagnosis.

- (2) To provide a service facility for Health authorities in the Caribbean in areas of virology in which expertise exists at CAREC

Using a statistically selected population frame a poliomyelitis antibody survey was made and sera from 372 of 381 selected school children were tested, a response of 97.6%. Results showed that the total

positives for five and nine year olds in Trinidad with polio type 1 and 2 antibodies were certainly between 87 and 91 percent and probably as high as 97 percent.

Hepatitis B studies continued with Professor Spence of Toronto University, as did follow-up for convalescent sera.

(3) To develop or continue with specific projects

The detailed investigation of diarrhoea in a closed mental hospital community continued and led to recommendations for routine standardized treatment, as well as clinical and laboratory surveillance.

A serological survey for equine encephalitis and other arboviruses in Guyana was carried out, 0.8 percent of 367 samples had detectable HI antibodies to one or more of the antigens of Eastern, Venezuelan, or Western equine encephalitis or St. Louis encephalitis or a combination of them.

3.3.3 Parasitology

In parasitology the development has been slower than anticipated but a routine service has been maintained and in entomology the Centre continued to be involved in the survey for Anopheles mosquitoes in the Rupununi Savannah of Guyana and in helping the Government of Guyana in testing the susceptibility of Anopheles species to DDT.

3.3.4 Routine entomology and small mammal collections continued and a reference listing of biting arthropods for most of the Commonwealth Caribbean countries was completed.

3.4 Training

During 1976 a considerable expansion of training activities took place. A total of 27 courses, workshops and in-service programmes arranged by CAREC's staff were attended by 406 people from 21 countries. Ten of these courses were held at CAREC but increasing emphasis was put onto in-service training in the territories. Development of course and instruction materials took a high priority. Follow-up to course participants is being carried out by CAREC staff members. Local training materials are being produced on the CAREC press.

Continuing emphasis has been directed towards medical practitioners and medical students to raise their awareness to disease control surveillance activities and the utilization of laboratory services. CAREC continued its cooperation with the Departments of Microbiology and Social and Preventive Medicine in the University of the West Indies, in teaching at the post-graduate and undergraduate levels and in addition, supervised some undergraduate

projects. CAREC training facilities were further improved and the University of the West Indies Extra Mural Department has been using the CAREC Lecture Theatre and Training Laboratory facilities for evening classes for public health inspectors and also for laboratory technologists.

The training programme was almost entirely supported by the CDC Grant to CARICOM and during the year course participants came from every one of the English-speaking commonwealth territories, as well as Surinam and Curacao.

### 3.5 Research

3.5.1 The Centre has continued to introduce and develop new techniques and promote research associated with the service activities such as the programme in hepatitis, gastroenteritis and poliomyelitis antibody testing. A longitudinal study on injuries (which account for 25% of all discharges from the Port of Spain General Hospital) has commenced.

3.5.2 Current research in association with the United Kingdom Medical Research Council includes:-

Studies of leptospirosis and rabies in Grenada and Trinidad and Tobago. The study in leptospirosis is linking the human with the rodent and domestic animal aspects of this disease.

The study on human filarias and their vectors in Trinidad has confirmed the existence of the focus of Wuchereria bancrofti. The studies during 1976 of Mansonella ozzardi on the north coast of Trinidad showed infection in 17 of 3,432 (0.05%) smears. But there is no evidence yet of clinical symptoms associated with this infection. Culicoides phlebotomus has been shown to be the main species in the area and filaria infections have been found within the species. Half of identified blood meals from wild caught C. phlebotomus are of human origin.

The study of the taxonomy, ecology and vector potential of the man-biting Simuliidae in Guyana conducted jointly with the National Science Research Council of Guyana continued. The results have shown that 2 species - Simulium incrustatum and Simulium sanguineum appeared to be the main biters, but that major taxonomic difficulties exist in defining species. As might be expected the peak biting season with an intensity of up to 884 fly bites per man hour, was in the height of the rainy season. These studies were co-ordinated with similar work in Brazil during June 1977 when Dr. Shelley visited Guyana with Dr. Tikasingh (CAREC).



The study of myocardial ischaemia, high density lipoprotein and coronary risk factors in Trinidad, commenced on the 1st April, 1976. Prevalence data are currently being collected.

- 3.5.3 The Rockefeller University Streptococcal Unit funded by a grant from the American Heart Association is investigating the cellular response in patients with post-streptococcal sequelae to cell wall and cell membrane antigens of locally isolated Group A streptococci. A 12-month longitudinal study on rheumatic patients using the lymphocyte migration inhibition technique indicates that there may be two types of cellular response, one which rises with time after onset and one which decreases with time after onset. Immunogenetic studies have been performed on rheumatic families, nephritic families and families which have no history of rheumatic fever or acute glomerulonephritis. Tissue typing analysis has shown that there was a lower proportion of HLA B5 in rheumatic families compared with the other two groups.
- 3.5.4 The Centre continued to provide scorpion holding facilities for Professor Courtenay Bartholomew's studies on the Role of Scorpion Venom in Acute Pancreatitis in Trinidad.

#### 4.0 IMPACT OF FUTURE WORK

The Aims and Objects set out above and the review of the programmes show that CAREC has been providing surveillance and laboratory facilities to the area and raising the awareness of the need for surveillance and its application to improve the countries' programmes. The priority in surveillance is directed to those diseases for which immunization is available. The third meeting of the Scientific Advisory Committee (SAC) and Council of CAREC (March 28 - 31 1977) clearly identified that the surveillance activities and laboratory service should be closely associated with but separated from the immunization programme. By establishing disease base lines and monitoring changes with sound statistical backing CAREC plans to provide a service to the territories in the development, management and monitoring of programmes in immunization as part of the delivery of basic health care. In addition, the Centre is equipped to carry out limited titration of vaccines and sero-epidemiological surveys on the effectiveness of vaccine used.

The general level of laboratory services to back up the surveillance programme leaves much still to be done particularly in the smaller territories. The Centre's professional staff have, by regular visits and specific disease oriented training programmes, already started to raise the standards in these laboratories. However, the full impact of these programmes cannot be fulfilled without considerable upgrading of the laboratory facilities and the creation of a

proper career structure for laboratory technicians. There is an almost total lack of pathology services in the smaller territories. CAREC would thus hope to collaborate in the development of the UNDP proposal for the "Strengthening of Laboratories in the LDCs". In addition, the morale and quality of laboratories require to be raised and maintained at a high level by utilization of CAREC Proficiency Testing and the introduction and monitoring of new techniques. These laboratory facilities need to be developed independently within the territories with the utilization of the Centre as a reference resource. To this end, considerable efforts are still required to develop an awareness in physicians and allied health workers in the need for laboratory diagnosis as well as for the implementation and utilization of an efficient transport system for specimens both within and between territories.

The cadre of designated epidemiologists in the territories continues to require strengthening with the support of the Centre as a 'fire brigade' service for epidemic investigations, with appropriate support materials.

One major area of impact has been the development of disease specific surveillance goals for each territory for the epidemiologists. This is already leading to a wider utilization of CAREC services and to a better reporting system. However, the full impact of these initiatives will only be possible when all members of the health team including physicians are involved. Thus the emphasis will continue to be placed on within-country training programmes in association with the designated epidemiologist.

The Council of CAREC has clearly identified maintenance of equipment and laboratory management as areas of deficiency and it is proposed that CAREC should develop expertise in this area.

Gastroenteritis, food-borne disease and immunisation programmes are the major specific problems identified in the service and research programme as shown in the review. However, there is also potential for individual research projects at different levels so long as they are pertinent to the area and can be accommodated within the programme of CAREC and its facilities. These projects also make available to the area expertise which would otherwise not be there e.g. in parasitology, entomology, mammalogy and immunology.

Development of teaching aids and materials and the dissemination of information are still requiring considerable development. CAREC by its monthly CAREC Surveillance Report tries to keep doctors and allied health personnel aware of the communicable disease pattern throughout the Caribbean. Also, the first annual survey summary of communicable disease in the area was produced in January 1977 in close cooperation with the Department of Health Statistics, Washington.

In the long run, the success of CAREC contribution to the territories must be assessed in its ability to create a strong local

surveillance system both in communicable and non-communicable disease and therefore both are receiving attention at the Centre. A research project in Ischaemic Heart Disease and a surveillance-linked project in the study of injuries form the nucleus of future work in non-communicable disease.

The Centre is creating a cadre of West Indian nationals with a trainee programme for epidemiologists, microbiologists and laboratory technicians from the West Indies aimed at producing self sufficiency for the area in ten years.

The impact on actual disease programmes may take some time to measure but the areas where this might be seen would, among others, be:

- a) in the immunisable diseases;
- b) in the introduction of control measures for gastroenteritis based on a fuller understanding of the etiological agents (perhaps the most important thing here is to stop the indiscriminate use of antibiotics in gastroenteritis);
- c) the introduction of oral rehydration techniques;
- d) development and implementation of a strategy for the control and eradication of leprosy and tuberculosis;
- e) monitoring of diabetes and hypertension detection and control programmes.

At the same time, a high degree of awareness of the danger of introduction of exotic disease must be maintained, as well as the potential for the diagnosis and investigation of such diseases, and in close cooperation with the animal health resources, the Zoonoses.

The close contacts with the universities will be used to raise the awareness in teachers and students of the problems of surveillance for communicable disease and non-communicable disease and the rational use of laboratory facilities.

## 5.0

### CONCLUSION

The PAHO/Caribbean Epidemiology Centre has clearly established programme priorities and after two years of operation understands the realities of its task. The Council of the Centre has set down the programme as outlined above for the forthcoming year but, the resources are extremely limited and there are major problems of long-term finance. The service and research programmes are constantly under review in order to provide the maximum service to the territories; these must be closely co-ordinated with the health Agencies of the Caribbean, universities of the area, PAHO and other relevant bodies.

The Centre will be most effective when its resources are utilised to meet the health needs by the health agencies of the territories and centers in the Division of Disease Control and by close coordination with the relevant activities of all Divisions of PAHO available in the Caribbean area.