

Special Feature

THE CARIBBEAN EPIDEMIOLOGY CENTRE (CAREC)¹

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The Caribbean Epidemiology Centre began operating on 1 January 1975 under the administrative management of the Pan American Health Organization (PAHO) at the request of the Caribbean Health Ministers' Conference held in the Bahamas in 1974. This presentation outlines the events leading to formation of the Centre and describes its structure, objectives, and development from January 1975 through 1978.

Background

During 1971 and 1972 the Caribbean island of Trinidad experienced major poliomyelitis and typhoid fever epidemics. In addition, cholera reached Portugal around that time. Because of these developments, the territories and English-speaking countries of the Caribbean were especially conscious of communicable disease problems—not only the direct threat posed to their inhabitants but also the potential threat to tourism, their major industry. It was realized, however, that little accurate information existed on communicable disease patterns in the Caribbean countries and territories.

The consequent need for good epidemiologic surveillance and backup laboratories was first stated by Dr. Eric Williams, Prime Minister of Trinidad and Tobago, and his

call for action was endorsed by the Caribbean Health Ministers' Conference held at Dominica in 1973. In this same vein, Dr. Williams had approached PAHO the previous year to see if the Organization would be interested in setting up a disease surveillance center based in Trinidad that would incorporate the activities of the existing Trinidad Regional Virus Laboratory. This laboratory, situated near the center of Port-of-Spain, was used by the Rockefeller Foundation for Arbovirus studies from 1962 to 1968, during which time it was attached to the Department of Microbiology of the University of the West Indies. In 1968 the Rockefeller Foundation withdrew its funding, but the University kept it in operation with contributions from the Governments of Barbados, Guyana, Jamaica, Trinidad and Tobago, Britain, and serial grants from the Medical Research Council of the United Kingdom and the National Institutes of Health (U.S.A.).

In response to Dr. Williams' request, PAHO sent a team of leading scientists to examine surveillance requirements in the area. This team presented a report in 1973 confirming the need for a disease surveillance center. Subsequently, a Pan-Caribbean conference held in Jamaica in April

¹Also appearing in Spanish in the *Boletín de la Oficina Sanitaria Panamericana*, 1979. An exception has been made in this case in the *Bulletin's* editorial practice of using American spelling since the terms of the original agreement refer to the "Centre."

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1974 endorsed plans for performing disease surveillance work based at the Trinidad Regional Virus Laboratory. As a result, PAHO and the Government of Trinidad and Tobago signed a bilateral agreement making over the lands and facilities of the Trinidad Regional Virus Laboratory to PAHO for 10 years; and in October 1974 PAHO signed an additional multilateral agreement with the Governments of the Commonwealth Caribbean. Together, these agreements provided the structure of what was to become the Caribbean Epidemiology Centre (CAREC).

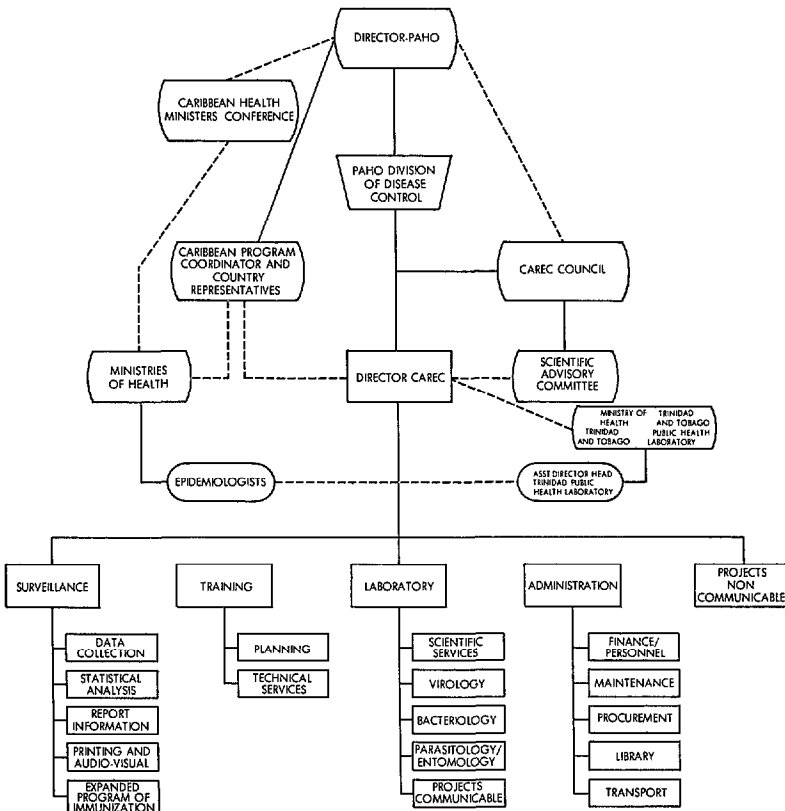
By geographic coincidence the Trinidad Public Health Laboratory was situated in the same building as CAREC, facilitating the arrangement whereby the Director of

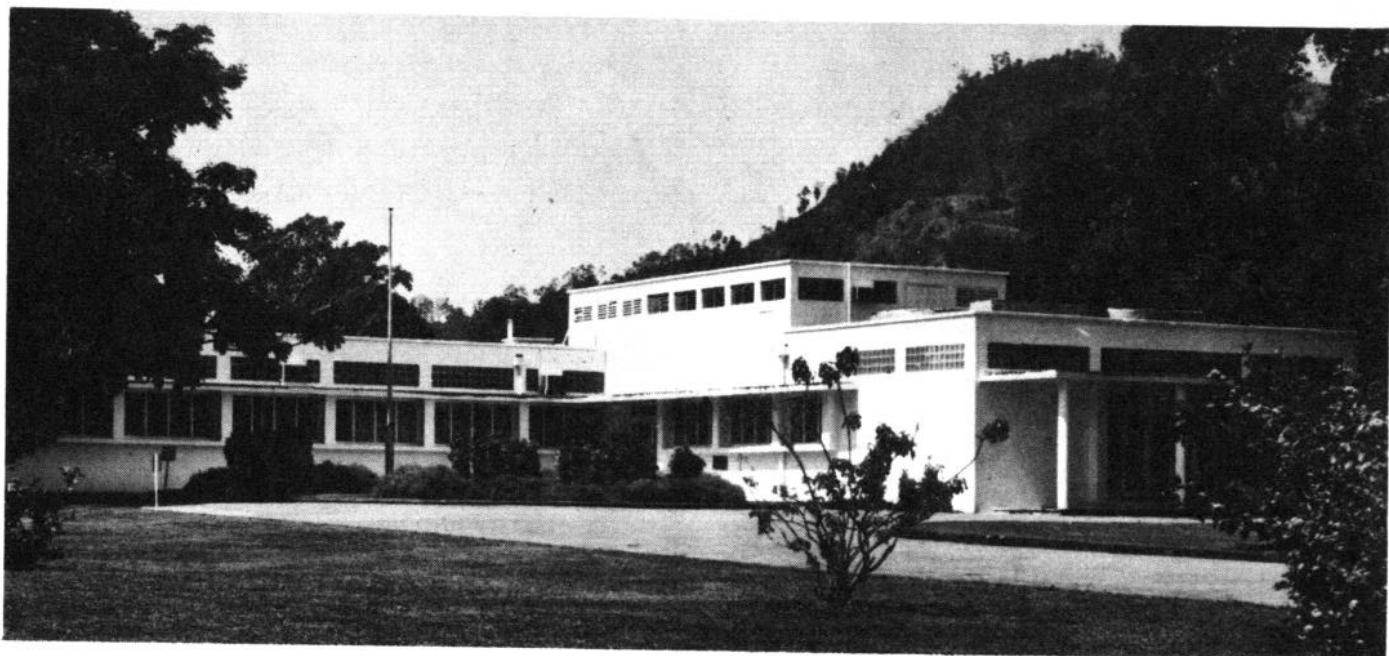
that laboratory also became the Assistant Director of CAREC. Very strong and essential links were thus created between the Trinidad Public Health Laboratory and CAREC—links which have continued to develop.

The structure and relationship of CAREC, as defined by the forementioned multilateral agreement, to other parts of the PAHO system and the Caribbean Health Ministers' Conference, are shown in Figure 1. In this regard, the close relationship established between CAREC and the West Indies Government (through their health ministries and the Caribbean Health Ministers' Conference) is particularly important.

The CAREC service and research pro-

Figure 1. The organizational structure of CAREC and its relationship to the Trinidad Public Health Laboratory, Member Government health ministries, the Caribbean Health Ministers' Conference, and PAHO.





Main building of the Centre (photo: CAREC).

gram is reviewed in depth annually. This committee is composed of five scientists nominated by the Director of the Pan American Sanitary Bureau (PAHO's executive agency), three medical faculty members and one agricultural faculty member from the University of the West Indies, and three representatives nominated by the Conference of Ministers Responsible for Health in the Caribbean. The committee reports directly to the Director of PAHO but also advises the CAREC Council—which is responsible for advising the PAHO Director, and through him the Caribbean Health Ministers, about the Centre's program and budgetary needs. The Council consists of three representatives nominated by the Conference of Ministers Responsible for Health in the Caribbean, one representative each from the University of the West Indies, the Caribbean Community (CARICOM), Commonwealth Caribbean Medical Research Council, the Overseas Development Ministry of the United Kingdom, PAHO, and the chairman of the Scientific Advisory Committee.

In accord with the multilateral agreement, CAREC has been established for a 10-year period beginning on 1 January 1975, an agreement subject to review at the

end of 1979. The Governments signatory to the agreement also consented to make quota contributions providing approximately 60 per cent of CAREC's core budget, the remaining 40 per cent to come from PAHO/WHO, and the Overseas Development Ministry of the U.K. The encouraging degree of support subsequently enjoyed by the Centre is indicated by the fact that up to the end of 1978, over 90 per cent of the quota contributions had been paid.

The basic objectives of CAREC, set down clearly in the agreement, may be summarized as follows:

- to establish and consolidate disease surveillance in the Caribbean area, first for communicable diseases and later for noncommunicable diseases.
- to provide diagnostic laboratory facilities for virology and supportive and referral laboratory facilities for bacteriology and parasitology.
- to provide laboratory and surveillance training for Caribbean area personnel.
- to conduct research relevant to the core programs of communicable disease surveillance and laboratory work.

A novel feature of the original recommendation by the Ministers was that each territory should designate one physician to work closely with the Centre as the designated epidemiologist. Although the link

provided by these designees has proved invaluable, it also became clear very early that the travelling and multiple duties of those named, particularly in the smaller territories, did not allow them enough time for epidemiology. As a result, especially in the smaller territories, the Centre has responded to a request by the health ministers to develop a cadre of deputy designated epidemiologists who are public health inspectors and public health nurses. The Centre has also sought commitments from the larger territories to create surveillance units; and in Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago full-time medical officers have been assigned to such surveillance units.

CAREC Activities

During 1975 an in-depth survey of surveillance and laboratory facilities revealed severe shortcomings. As a result, the major part of the Centre's work over the past four years (see Tables 1 and 2) has been devoted to training members of the surveillance team—including statistical clerks and lab-

oratory workers as well as the designated epidemiologists. In accord with this process, regular meetings of designated epidemiologists and laboratory directors (and beginning in 1978 statistical clerks) are held each year.

To further facilitate the training of laboratory workers, a training laboratory was built at CAREC. This laboratory, with a 25-student capacity, is in regular use throughout the year. In addition, the Centre has a lecture theater and library where small groups of up to about 30 people can hold meetings.

At present 19 countries and territories are participating members of CAREC (see Figure 2). Development of their surveillance activities has had to include development of individual surveillance units, assistance during epidemics, and provision of information and training materials.

One special problem is that the laboratories of many territories are very small, making laboratory technicians there feel isolated and underutilized. One of CAREC's main responsibilities has been to raise the

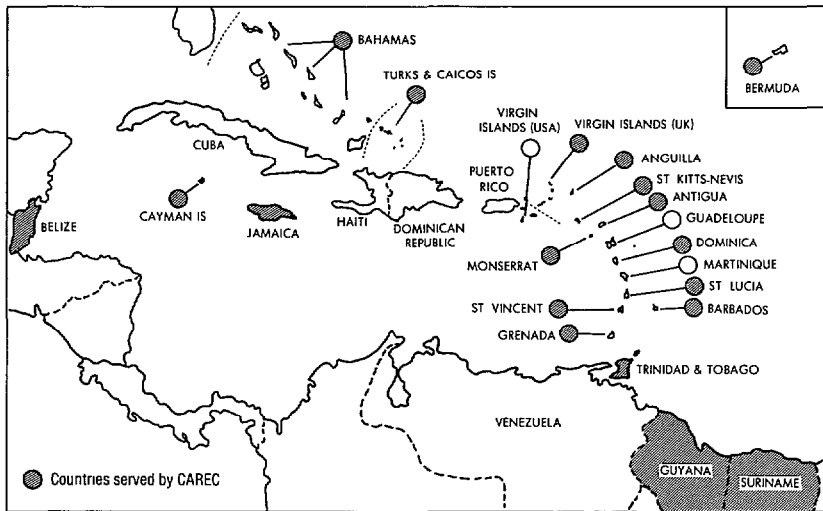
Table 1. Personnel receiving CAREC training in 1976, by profession and country or territory of residence.

Country	Physicians	Nurses	Public health inspectors	Laboratory technicians	Clerks	Administrative personnel	Not differentiated by profession	Total
Antigua	1	1						2
Bahamas	18	10	3	1		1		33
Barbados	2	1		5				8
Belize	19	1	1	2	14			37
Bermuda	1	1		2				4
British Virgin Islands	1			2				3
Cayman Islands	1			1				2
Curaçao				3				3
Dominica	1	1		2				4
Grenada	1	1		2				4
Guyana	2	19	21	3				45
Jamaica	32	27	20	6		3	3	91
Montserrat		1		1				2
St. Kitts-Nevis, Anguilla	3	8	1	4				16
St. Lucia	2		1	2				5
St. Vincent	1						1	2
Suriname	20	6	1	2			28	57
Turks and Caicos Islands	3	12	1	2			2	20
Trinidad and Tobago	4	3	26	25			5	63
Other	1							1
Total	113	92	75	65	14	4	39	406

Table 2. Personnel receiving CAREC training in 1977, by profession and country or territory of residence.

Country	Physicians	Nurses	Public health inspectors	Laboratory technicians	Statistical officers	Medical students	Nursing students	Not differentiated by profession	Total
Antigua	1			2					3
Bahamas	3	40		3					46
Barbados	1	1	20	2	1				25
Belize	1		6	1					8
Bermuda	1			1					2
British Virgin Islands	1			1					2
Dominica	1	7	5	6	1				20
Grenada	1	1	1	1	1				5
Guyana	11	1		1	1			12	26
Jamaica	24	18	11	3					56
Montserrat	1			2					3
St. Kitts, Nevis, Anguilla			1	4					5
St. Lucia	1			5	1				7
St. Vincent	1			1	1				3
Suriname	2			2	3	80		57	144
Trinidad and Tobago	28	25	89	15	2		51	19	229
Turks and Caicos Islands				1					1
U.W.I. Courses			20			35		31	86
Other	6			2					8
Total	84	93	153	53	11	115	51	119	679

Figure 2. The 19 Caribbean countries and territories served by the Caribbean Epidemiology Centre (CAREC).



quality of microbiology in these laboratories. To help accomplish this, a bacteriology and parasitology proficiency testing scheme has been introduced. While the results obtained to date justify continuing concern about the quality of the laboratory services involved, it is encouraging to note that the number of participating laboratories is on the rise.

Experience at the Centre to date has been disappointing so far as the training of West Indian nationals in epidemiology and microbiology is concerned. However, it is encouraging to note that West Indians currently occupy 4 of the 12 professional positions on the Centre's permanent staff. Overall, the Centre's staff has grown rapidly—from 35 members in 1975 to 90 at the end of



Training health personnel is one of CAREC's major functions. During 1976 and 1977 more than 1,000 people received some form of professional training by CAREC staff—through courses and workshops at the Centre or in-service training given in the countries themselves

1978. The staff's present size is now deemed adequate, and no further significant growth is anticipated.

Though the CAREC member countries are about 2,000 miles apart from north to south and 2,000 miles east to west, the total population is approximately 5 million people. Hence communication within the area is a major problem. To help improve communications, the Centre has produced the monthly *CAREC Surveillance Report* since 1975. The purpose of the report, which has a current monthly circulation of 2,300, is to provide timely dissemination of epidemiologic information. When epidemic conditions or other circumstances suggest the need, special "Epi-Notes" are issued to the designated epidemiologists and laboratory directors.

Because of the large distances involved, CAREC has also established a special system for transporting specimens—between islands and to CAREC—for testing and diagnostic confirmation.

In addition, establishment of the CAREC surveillance unit has entailed review of all disease notification systems in the Caribbean. As a consequence, in contrast to the very small number of territories reporting in 1975, by the end of 1978 all the Commonwealth Caribbean countries and territories

were reporting, and close liaison had been established with the French Departments, the Netherlands Antilles, and with Cuba, the Dominican Republic, and Haiti. The result is that the *CAREC Surveillance Report* is now able to give a complete picture of disease patterns in the Caribbean.

In accord with its task of providing current data, the report carries articles on subjects of topical interest. Particular encouragement is given to articles submitted by Caribbean nationals that result from investigations performed by national teams and the Centre's surveillance unit. The Centre publishes a yearly review of the previous year's communicable disease picture. This review, which appears in January, is available upon request from the Editor of the *CAREC Surveillance Report*.

From its inception, the Centre has enjoyed an extremely close relationship with the United States Center for Disease Control (CDC) in Atlanta, Georgia. Since 1975 the CDC has assigned an epidemiologist and a public health adviser to the Centre.

In addition, a special 1975-1978 grant from CDC to the CARICOM Secretariat of US\$328,000 for surveillance development gave the Centre financial flexibility in providing supplies and equipment for investi-

gating epidemics, and (especially) developing training programs. The role of this grant, as a necessary supplement to CAREC's core budget, was foreseen in 1972. At the present time additional external funding is being sought from the U.S. Agency for International Development (USAID) in order to consolidate the work made possible by this grant.

Before PAHO assumed responsibility for CAREC in 1975, the Trinidad Regional Virus Laboratory was developing from an arbovirus research unit into a general virus laboratory. In order for the facility to fulfill its more general role as the base for a Caribbean-wide surveillance system, the laboratory had to be further diversified and modernized. Accordingly, the existing virology section was developed, and bacteriology, parasitology, and entomology sections were introduced. A generous grant from the U.K. Overseas Development Ministry made it possible to install appropriate safety equipment. (Ever since its inception the Centre has emphasized laboratory safety and has tried to raise the level of safety and awareness of the need for safety in laboratories throughout the area.) In addition, another Development Ministry grant has recently made it possible to achieve further modernization.

Overall, however, the laboratory facilities are still not adequate for CAREC's

needs. Accordingly, a development and restructuring plan has been worked out in association with the Government of Trinidad and Tobago. This plan, which is to cost approximately US\$500,000, provides for rationalization of the common services performed by CAREC and the Trinidad Public Health Laboratory and commenced implementation in March 1979.

The investigations of epidemics performed by CAREC have been many and varied. The Centre has made it an unvarying practice to respond to all requests on the first available airplane returning to the site involved. Requests of this kind concerning outbreaks of specific diseases are also used to provide on-the-spot training for investigative and laboratory personnel. The following examples illustrate the range of epidemic investigations in which CAREC has been involved:

- parathion poisoning in flour (Jamaica)
- lead poisoning of pottery workers (Barbados)
- typhoid (Dominica, Grenada, Guyana, and Jamaica)
- *Clostridium perfringens* in black pudding (Trinidad)
- nosocomial infection (Trinidad)
- malaria (Grenada)
- poliomyelitis (the Bahamas, Grand Turk, St. Vincent, and the Dominican Republic)

With regard to research, the Centre has been fortunate in receiving from the U.K.'s



First meeting of designated epidemiologists from the Caribbean, May 1975 (photo: CAREC).



Filariasis survey in Trinidad and Tobago
(photo: CAREC).

Medical Research Council for studies on filariasis in Trinidad, leptospirosis in Grenada and Trinidad, black fly (*Simulium*) in Guyana, and ischemic heart disease in Trinidad and Tobago.⁴ Other support for significant research projects has included a grant from Canada's International Development Research Center for work on the etiology of gastroenteritis in Guyana, St. Vincent, and Trinidad and Tobago, as well as a grant from the American Heart Foundation and the U.S. National Institutes of Health for continuing study of the role of *Streptococcus* in glomerulonephritis and rheumatic heart disease in Trinidad. The latter study is being coordinated by the Rockefeller University of New York.

Particularly encouraging work has also been done on the utilization of new insect cell lines in field diagnosis of arboviral dis-

eases, particularly yellow fever and dengue. The total amount allotted to research in CAREC's 1978 budget was approximately US\$400,000.

During the Caribbean dengue pandemic of 1977-1978, CAREC was closely involved in virus isolation and serologic work. The Centre's virus diagnostic potential was likewise employed to identify yellow fever virus from Trinidad and Tobago during the country's epidemic which started with an epizootic in monkeys in November 1978.

A program of collaboration with veterinarians is being developed in order to improve the reporting and coordination of zoonoses surveillance—with particular reference to such conditions as rabies, leptospirosis, and a number of arboviral diseases.

In keeping with the PAHO/WHO programs for development of immunization, PAHO assigned a regional immunization officer to CAREC in 1977. This collaboration has led CAREC to become very closely involved with assessment of immunization coverage and with potency testing of vaccines on a limited scale. To assess levels of immunization against poliomyelitis, surveys of poliovirus antibodies in children 5-9 years of age have been conducted in the Bahamas, Bermuda, the British Virgin Islands, Dominica, Montserrat, St. Vincent, Suriname, and Trinidad and Tobago. In regard to vaccinations, the level of coverage still leaves much to be desired. This is particularly true in the case of DPT vaccination, there having been a considerable number of diphtheria and tetanus cases in the CAREC area in 1978.

As the foregoing attests, the Centre has come to provide a major component of PAHO's country programs for disease surveillance and control. At the present time, and in the foreseeable future, it is expected that CAREC will continue to consolidate and develop that role, with the full collaboration of the countries and health ministries involved.

⁴This latter project is devoted to studying the differences in cardiovascular risk factors between Trinidadians of East Indian and African origins. The first examination of a well-controlled census population of 600 men over 35 indicated that hypertension was far commoner in those with African origins, but that other cardiovascular risk factors and diabetes occurred far more commonly in those of East Indian descent.